TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY,
1902.

☞ SEE LAST PAGE OF COVER.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 4, 1902.

A duly notified stated meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

This being the commencement of the term of office of the new board of Officers and Standing Committees, the President delivered his annual address as follows:

Ladies and Gentlemen,

Members of the Massachusetts Horticultural Society:

It is assigned to me by your very complimentary vote at the annual meeting, and by usual custom at the first meeting of the new year, to open with a few remarks. To me it is a pleasure to perform any duty that may tend to enable the members of the Society to act in greater unity and concert, that the present and past usefulness and future welfare of the Society may continue, in its legitimate purpose, to carry forward and adhere to the original Act of Incorporation for the "purpose of encouraging and improving the science and practice of horticulture and promoting the amelioration of the various species of trees, plants, fruits, and vegetables." The Society with its long life and energies has

moved this great Commonwealth with the spirit of enterprise that we now enjoy in horticultural pursuits, and, by the addition of the great productive industry so well established, and yearly increasing, which affords sustenance and good homes to a vast number of people within this Commonwealth.

The first Saturday in January is the time fixed by the By-Laws when the newly elected officers enter upon their official duties, when the Treasurer's report of the receipts and expenditures of the Society and the Schedule of Prizes for the ensuing year are in order to be acted upon.

We are assembled here today in this new and substantial edifice, it being the third building erected by the Society for its exhibition halls and library. The Society, with its seventy-two years of active life, eminent in its calling, now approaches the most important epoch in its history. The ensuing year will demonstrate, may we hope, the success of the removal from the business portion to the residential section of the city, a change that requires very considerable adaptability and a persistent purpose to carry forward with the utmost energy the objects of the Society so fundamental to its life and prosperity. Our main object should be a strong unanimity, not only to adapt ourselves to our situation, but a determination to overcome all prejudice that may exist, and work with a will to reinstate the good old prosperous years we enjoyed in the spot that many left with feelings of deep regret. The year just closed has, therefore, been to many members one of considerable anxiety.

The completion of this building so late in the year made necessary the postponement of the summer exhibitions, but the first flower show held in this building on June 3d to 9th proved a marvel of beauty and a success, and the halls proved their complete adaptation for the exhibition of plants of very large size that no other hall could possibly accommodate; it also proved undoubtedly the most elaborate of its kind ever brought together in this country.

The second exhibition held in this building, on November 7th to 10th, when prizes were awarded for fruits, flowers and vegetables, proved a marked success; it brought out in the greatest profusion, the richest treasures of the greenhouses, gardens and orchards, and all the available room seemed to be occupied, and

the arrangement was wonderfully pleasing in every feature; it was a well deserved credit to the committee having it in charge.

Both of these exhibitions were generously patronized and appreciated by the public, and left a substantial sum above expenses incurred. These displays also demonstrated that the public will sustain large exhibitions of the Society and will also encourage and patronize the Sunday exhibitions. Is there anything more worthy than the rich treasures of the fields and gardens?

The Committee on School Gardens and Children's Herbariums in December held an exhibition in the Lecture Hall, which proved one of the best ever held under the auspices of this Society and well deserved the encouragement it received. Here much intelligence and taste was abundantly manifest in the preservation of flowers and plants, both wild and cultivated, which were perfectly arranged.

In conclusion, for I must be brief in view of the business of the meeting, permit me to remind you of your duties for the ensuing year and to urge you to use your best efforts to sustain the Society. Your Committees will recommend no reduction in the amount of premiums. We are surrounded with new conditions that none can accurately foresee; the year will be one of experiment and experience, and let us resolve that no effort shall be spared to render the exhibitions and the general prosperity of the Society superior to those of the years that have preceded us.

Ladies and Gentlemen, tendering you my thanks, in behalf of the Society, I offer the congratulations of the season.

The Executive Committee reported a recommendation that the Society make the following appropriations for the year 1902:

For Prizes and Gratuities for the year 1902,

For Plants	$2,000.00
For Flowers	2,500.00
For Fruits	1,700.00
For Vegetables	1,200.00
For Gardens	500.00
For Native Plants	175.00
Total	$8,075.00

For the Committee on School Gardens and Children's Herbariums, for Prizes	$125.00
For the same Committee for Incidental Expenses .	75.00
For the Library Committee, this sum to include the income of the French and Farlow Funds . .	700.00
For the Committee of Arrangements, this sum to include all extraordinary expenses of said Committee	300.00
For the Committee on Forestry and Roadside Improvement	150.00
For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund	250.00
For the Salaries of the Treasurer and Superintendent of the Building, and the Secretary and Librarian .	3,000.00

These appropriations are the same as for last year, and they were unanimously voted.

The Executive Committee also reported the appointment of Charles E. Richardson as Treasurer and Superintendent of the Building, and Robert Manning as Secretary and Librarian for the year 1902.

The Report of the Committee on Forestry and Roadside Improvement, and the Report of the Committee on Native Plants were read by the Secretary and severally referred to the Committee on Lectures and Publication.

(AA. *See statement, page 10.*)

The Annual Report of the Committee on Lectures and Publication was read by Hon. Aaron Low, Chairman.

On motion of Francis H. Appleton it was

Voted, That the reading of the reports of Committees be dispensed with, and that said reports be referred to the Committee on Lectures and Publication.

Patrick Norton presented his report as Chairman of the Committee on Gardens.

Joseph H. Woodford presented his report as Chairman of the Committee of Arrangements.

Henry L. Clapp presented his report as Chairman of the Committee on School Gardens and Children's Herbariums.

These reports were severally accepted and referred to the Committee on Lectures and Publication.

A motion that the report of the Building Committee, giving a detailed statement of the cost of the new building, be read, was defeated.

On motion of George D. Moore, it was

Voted, That an itemized statement of the cost of the new building be prepared by the Building Committee and sent to every member of the Society.

A printed copy of a proposed new Constitution and By-Laws was offered and read by Richard M. Saltonstall. After a second reading by Francis H. Appleton, and after it had been voted to change the word "shall" to "may" in the sixth line of Section XIII, and the words "a majority" to "two-thirds" in the next to the last line of Section XVI, the proposed Constitution and By-Laws were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting on the first Saturday in April.

Vice-President Benjamin P. Ware was now called to the chair and it was, upon motion of J. Woodward Manning,

Voted, That the President of the Massachusetts Horticultural Society be a Committee of one to serve on the General Reception Committee for the Sixth Annual Meeting of the American Park and Outdoor Art Association, to be held in Boston, in August, 1902.

Voted, That $100 (one hundred dollars) be appropriated by the Massachusetts Horticultural Society toward a fund to be placed at the disposal of the General Reception Committee of the American Park and Outdoor Art Association.

In regard to the disposal of the statues of Ceres, Flora and Pomona, which had adorned the old Horticultural Hall, on Tremont Street, it was

Voted, That a committee be appointed to confer with the donors of the statues and the City of Boston in reference to their disposal by the Society. President O. B. Hadwen, William C. Strong and William H. Spooner were appointed as that Committee.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected :—

Francis R. Bangs, of Boston.
George E. Cabot, of Boston.
Arthur Dehon Hill, of Boston.
Edmund Reardon, of Cambridgeport.

The meeting was then dissolved.

Statement.

The records of the Stated Meeting, held Saturday, January 4, 1902, were not completed by Mr. Robert Manning, late Secretary of the Society, before his death, which occurred February 17th. From the line in such records marked AA they were prepared by Mr. Nathaniel T. Kidder, who was appointed Secretary *pro tem* March 1st, from memoranda left by Mr. Manning, from written copies of motions found among his papers, and from personal recollection.

MASSACHUSETTS HORTICULTURAL SOCIETY.

At a meeting of the Society on Saturday, November 2, 1901, it was voted that the Building Committee be requested to furnish a detailed statement of the cost of the new building. The following statement was received in reply to this request and at a meeting held January 4, 1902, it was voted that a copy be sent to every member of the Society.

STATEMENT OF COST OF NEW MASSACHUSETTS HORTICULTURAL SOCIETY BUILDING.

C. A. Dodge & Co.,	General Contract,	$238,219 62
John Evans & Co.,	Carving,	5,976 00
W. A. Snow & Co.,	Musician's balcony,	227 00
G. M. Angier,	Electric wiring,	2,721 22
A. A. Sanborn,	Heating and ventilating,	14,257 50
C. E. Horn,	Elevator,	445 00
Pierce & Cox,	Plumbing,	4,051 41
Murdock Parlor Grate Co.,	Bronze letters,	275 00
Vermont Marble Co.,	Marble for library,	65 00
L. M. Ham & Co.,	Sidewalk lights, etc., alley,	286 00
T. F. McGann,	Exterior iron balconies,	985 00
Bowker, Torrey & Co.,	Marble,	116 85
R. D. Ireland & Co.,	Electric light fixtures,	1,676 03
Elektron Manufacturing Co.,	Dumb waiter,	950 00
Walworth Manufacturing Co.,	Pipe,	5 79
Kearns & Co.,	Monolith floor, kitchen,	150 00
Duparquet, Huot and Moneuse Co.,	Kitchen furnishings,	555 50
R. Guastavino,	Arch over ticket office, etc.,	188 09
Enoch Robinson,	Brass rails, ticket office,	89 97
Taylor, Carr & Andrews,	Granolithic work, alley,	440 00
O. P. Hastings,	Shades,	115 47
Boston Electric Light Co.,	Service,	136 57
Metropolitan Coal Co.,	Coal,	699 84
John F. Berrigan,	Two tide valves,	201 49
Incandescent Electric Light Ma. Co.,	Manipulator for electric lights,	24 34
Thomas Parker & Co.,	Use of Salamanders,	67 75
B. F. Smith & Brother,	Testing for foundations,	302 75
Rockwell & Churchill,	Printing specifications,	49 50
Aspinwall & Lincoln,	Surveying,	35 00
W. L. Kimball,	Salary as Supt. of Construction,	2,020 50
Traveling Expenses,		437 74
Extra Blueprints for estimating,		79 49
Fireman's salary,		589 32
French & Hubbard,	Heating and elec. engineers,	904 40
Incidentals,		5 90
Wheelwright & Haven,	Architects,	13,646 32
		$290,997 36

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 11, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE BROWN-TAIL MOTH IN MASSACHUSETTS.

BY A. H. KIRKLAND, M. S., Boston.

Some of the most difficult problems in the economic entomology of the present day result from the importation of foreign insect pests. The San José scale, elm leaf beetle and gypsy moth are illustrations only too familiar. Such pests usually arrive unattended by the parasites or other natural enemies which control their increase in their native region, and in a new environment cause severe and widespread injury. The advantages offered by Massachusetts as a place of residence must be well understood by the insect fauna of other lands, for this Commonwealth certainly has received her a full quota of foreign insect visitors. To the ever lengthening list there has been added recently the brown-tail moth, a pest of the first magnitude at home. Apparently it is determined to maintain its reputation here if we are to judge by its serious depredations last summer in the Metropolitan district.

It is indeed a strange fatality that another European insect, closely related to the gypsy moth by habit and structure, should become accidentally imported into the same locality to which thirty years before a misguided scientist brought the gypsy moth. It would seem that the world is large enough to give each of these pests a separate "sphere of influence." That they were both transported across the Atlantic to the same locality by totally dissimilar agencies must stand as one of the remarkable entomological events of the century just closed. However, the pest is with us and in tremendous numbers. In five years' time it has spread from Somerville to Scituate, Brockton, Hudson and even to Kittery, Me. Knowing the habits of the moth it is fair to assume

* At Chickering Hall.

that a large part of the region lying between these points and the sea is generally infested.

The parent brown-tail moth is a beautiful, snow-white moth with a conspicuous brown tail, hence the common name. The moths expand some one and one-half inches and are on the wing throughout the month of July. They are sluggish and inactive by night and are strongly attracted by lights. That good old scientist Réaumur writes, "I have never seen the moth use them (the wings) in flight nor even try to do so," a statement which testifies to the good hours kept by this early student of insects if not to the unfailing accuracy of his observations. The eggs are neatly packed in a yellow hair-covered mass on the under surface of the leaves of pear and other food plants and hatch in about three weeks. The height of the flying and laying season falls around the 15th of July and by the first week in September the majority of the eggs have hatched.

The young larvæ feed at first on the epidermis of the leaf to which the eggs were attached, then draw down other leaves eventually covering them with a tough, silken envelop. In this way with a few leaves as a basis, the compact, silken winter webs are formed and securely attached to the twigs. The larvæ sally out by day to feed, returning to the web at nightfall, and on the approach of cold weather close the openings of the webs and hibernate in the silken chambers inside. The writer once counted the inmates of eighteen of these webs taken at random and found they contained from forty-seven to six hundred and seventy-four larvæ, with an average of two hundred and seventy-seven. Seven female moths carefully dissected contained from one hundred and forty-five to three hundred and forty-four eggs each, with an average of two hundred and fifty-one. These figures are suggestive as bearing on the possible rate of increase of the moth.

Within these silken shelters the tiny caterpillars rest secure throughout the vicissitudes of our New England winters. Réaumur noticed that they were not affected by a temperature of 11° Fh., while they passed unharmed through what Köllar euphemistically calls "the frost on the 2nd of February, 1830," when the mercury fell to 60° below zero Fh.

The return of warm weather causing the buds to swell brings forth the caterpillars with appetites in proportion to the length of

their fast. At this time these insects have a great advantage over some of our native fruit tree pests. Tent caterpillars or canker worms, for example, hatch in the spring and their growth, at least for a time, does not keep pace with the development of the foliage. The brown-tail moth larvæ, on the contrary, come forth partly grown and with the experience of weeks of foraging the previous fall. They consume buds, blossoms and leaves in turn, and where extra abundant will keep down every sign of leafage until the middle or last of June, when they spin up in masses on the sides of buildings, along fences and even in the foliage of trees. Within the cocoons the caterpillars soon change to pupæ from which in due season the moths emerge.

In Europe this insect is an old offender. It is found from southern Sweden to Algiers and from Portugal to the Himalayas, but it is from France and Germany that we obtain best accounts of its injury to orchards and forests. Thus in the early part of the sixteenth century Choirier relates that in the province of Dauphiny the caterpillars of this moth were so abundant that the attorney-general of the Province found it necessary to issue an injunction against them and ordered them to evacuate the fields. Again in 1543 a member of the city council of Grenoble introduced a resolve begging the local church official "to excommunicate these pests and censure them, in order to check the damage they were doing daily." The council promptly enacted the resolve.

Jean Goedart, writing in 1700, describes the "singular nature" and "remarkable knowledge and foresight" of the caterpillars. Réaumur, traveling from Tours to Paris in 1731, "found every oak in possession" of these insects.

In London and vicinity in 1782 damage by this insect was so severe as to terrorize the inhabitants; and in the language of Donovan "it was naturally interpreted as a visitation from Heaven ordained . . . . . to deprive men and cattle of their most essential food and leave them a prey to famine." Public prayers for relief were offered in the churches, while the municipal authorities, evidently believing that works go well with faith, gave a shilling per bushel for the caterpillar webs. At Clapham in a single day eighty bushels of webs were thus collected and burned.

In 1796 injury by this insect had become so great in France that a law was enacted by the French parliament compelling prop-

erty owners to cut off and burn the webs, the penalty for neglect being from three to ten days' imprisonment.

In 1829 M. Wallner found the caterpillars of the brown-tail moth causing severe damage throughout Bohemia, Austria, Bavaria and Switzerland. Ratzeburg states that in the late fifties the brown-tail moth ravaged the oaks in the streets of Potsdam and even killed some of them.

Altum records a local outbreak at Eberswald in 1874 when fruit trees were stripped, while as late as 1897 an anonymous writer in Gartenflora says "the larvæ of the brown-tail moth have entirely stripped the oaks and many bushes in the Tiergarten" at Berlin.

These records taken at random from European entomological works, the majority of which are in the library of this Society and to which I have been allowed free access, give sufficient evidence of the insect's capacity for harm. Lacking most of its natural enemies it is possible that here it may prove even more injurious than in the Old World.

In May, 1897, several Somerville, Mass., property owners found an annoying caterpillar plague on their pear trees, and reported the same to the Gypsy Moth Committee. Upon the indentification of the insects by Prof. C. H. Fernald the writer endeavored to discover how they had been imported. He found the depredations of the moth to centre around a Somerville florist's establishment where for many years, previous to about 1890, large quantities of roses had been imported from Holland and France. We know that this insect is a common pest in those countries. From observation, as well as from the testimony of Donovan, Salisbury, Boisduval, Senoner and others, we know that this insect feeds and spins upon the rose. Therefore, there is the strongest kind of circumstantial evidence that the insect was accidentally brought to Somerville on imported rose bushes.

The 1897 outbreak of the brown-tail moth will be long remembered by many Somerville citizens. Although a local affair involving only a few acres, it occurred in a densely populated section and hence assumed much importance. Pear and other fruit trees were completely stripped while a few shade trees were much injured. In 1898 and 1899 the control of the moth was attempted by the Gypsy Moth Committee as a result of legislative action and in those years but little damage was done by the insect. After

the state work against the moth had ceased in 1900, a large natural increase in numbers developed, and last year the ravages of the moth were notably severe throughout the Metropolitan district. Fruit trees were the chief sufferers, but shade trees were also quickly defoliated. In Allston and Brighton the damage was particularly severe, and as a result citizens of those districts petitioned the Boston Board of Health for a public hearing on the subject. The chief cause for this action was not, however, the caterpillars' injury to the trees, but rather the intense and truly terrible nettling which occurred whenever the insects came in contact with human flesh. This irritation in its worst form beggars description, as the writer can testify from personal experience. It has caused several cases of severe illness among children and aged people. So far as we have been able to determine, the irritation is a mechanical one, caused by the breaking up in the skin of the fine, brittle, barbed caterpillar hairs. It is not dependent upon the live insects because hairs from cocoons nettle as badly as those from living caterpillars, and after the cocoons are formed a person may become seriously affected by passing through a badly infested locality, the loose hairs apparently being blown about by the wind. European authorities do not discuss this matter to any great extent, apparently considering it as a well-known phenomenon. Köllar says that the caterpillars "should be taken hold of with great caution," while Fischer advises protecting the hands when engaged in the work of caterpillar destruction.

The present abundance of this insect throughout the Metropolitan district is a matter of grave importance. In Somerville, Cambridge, Arlington, Medford, Malden, Lynn and elsewhere there are enough hibernating brown-tail moths to cause widespread damage and affliction next summer. The noted pear orchards of Revere are thoroughly infested. There are so many webs in certain Belmont apple orchards that one might well believe that for some mysterious reason a part of the foliage did not fall last autumn, but remained dead upon the trees. There is hardly a pear tree within a five mile radius of Somerville but that is generally infested, while street elms, maples and willows all bear the webs of the hibernating insects. While the alarmist or pessimist may be unpopular, the writer holds that there are good grounds in this case for believing that we shall witness a most serious outbreak of

this insect next summer unless far reaching remedial measures are adopted.

If this insect confined itself to one or two species of trees its damage would be reduced and its spread limited. While the elm beetle or the tent caterpillar will not thrive in an oak forest, the brown-tail moth readily adapts itself to a wide range of food plants. Aside from fruit trees, European authorities lay particular stress on its injuries to oaks and elms. With us the pear ranks as the chosen food plant, with the apple a close second. Plum, cherry, quince and rose are well relished, while the white oak, swamp white oak, elm, silver maple, rock maple and wild cherry are among the trees frequented by the moth. This list shows that the distribution of the moth in this country will not be checked by lack of suitable food.

Since the female moth flies freely, we should look for a gradual extension of the infested area, and the writer believes it will be a matter of only a few decades before this pernicious insect will be found throughout New England. Aside from the migration of the mature insects, the caterpillars often travel three hundred or more feet in search of food. In their earlier stages they drop on teams and are thus transported from place to place. The principal spreading, however, takes place in the moth state and it is apparent that these insects sometimes fly several miles. Being strongly attracted to light, they are most abundant in the centres of towns, localities where street lights are most abundant. Multitudes of the moths are destroyed by arc lights. The writer has taken nearly two quarts of these moths from the globe of an arc light, while underneath such lamps in early morning the ground is often white with their bodies. All night long under these lamps sit toads ready to snap up the fluttering insects that fall partly stunned from the lights above. Of the moths killed by four lamps at the height of the flying season in 1897, thirty-five per cent were females that had not deposited their eggs.

The moth also has enemies of its own order in the shape of parasitic insects which sting the larvæ and pupæ. One minute parasite, *Diglochis omnivorus* Walk., is especially beneficial and destroys large numbers of pupæ. This parasite is of European origin and probably is the most important natural enemy of the brown-tail moth in this country.

Early in the spring predaceous bugs of the genus *Podisus* swarm to the caterpillar webs and destroy large numbers of the insects as they feed.

Wasps carry off a few of the small caterpillars, while the oriole and cuckoo devour them at times. We are obliged to credit the English sparrow with the destruction of large numbers of the mature moths. These birds search fences, house walls and trees in pursuit of the moths and feed eagerly upon them.

The combined efforts of these natural enemies as yet have not been sufficient to reduce the increase of the moth, and where the insect is abundant relief can be obtained only by the thorough application of preventive or remedial measures. Of these the destruction of the webs in the winter is the preventive *par excellence*. For five months of the year the caterpillars are assembled within their conspicuous webs at the tips of the twigs which may be cut off and burned with a minimum of effort and expense. So simple and effective is this preventive work that in France, as already pointed out, it is made obligatory on all owners or tenants of estates.

The implements needed are a ladder and a Waters' pruner or other long-handled pruning device. Thus equipped an active man can easily cut off and burn a large number of webs in a day. It is important that every web should be burned for the writer's investigations show that upward of ten per cent of the larvæ emerge from webs lying on the ground through the winter. In the winter of 1899–1900 the gypsy moth employees destroyed nearly one million of these webs on fruit and shade trees at an average cost of about one cent each. Where fruit trees only are treated the cost would be much less. Experience shows that to free a locality from the caterpillars all webs within a distance of three hundred feet should be destroyed. This indicates the great advantage and need of coöperation among owners of infested estates for it will profit the individual but little to clear his trees if this operation is neglected by his neighbors.

In spite of the fact that this insect is easily controlled by a little winter work, a large part of our citizens neglect it and these are the ones who fill the newspapers with lamentations deep and fervent about the middle or last of May. Where one has been so negligent as to allow the insects to commence feeding in the

spring, the proper course is to spray the trees at once with arsenate of lead. This insecticide is preferred to Paris green because it kills quickly, sticks to the leaves throughout the season and does not injure the most delicate foliage. If purchased in paste form it should be applied at the rate of three pounds to fifty gallons of water. If it is desired to make it from the ingredients there will be required:

1.2 lbs. nitrate of lead,
.5 " arsenate of soda 96 per cent pure.

Each ingredient should be carefully weighed and dissolved in water in a wooden or fibre pail. The two solutions should be mixed, when one pound actual arsenate of lead will be formed. This charge is equal to nearly two pounds of the paste arsenate of lead and is sufficient for thirty-five gallons of water.

In spraying, a fine nozzle should be used and work commenced at the top of the tree. If the poison once becomes dried upon the leaves it will keep the tree free from further damage by the caterpillars.

If this early spraying has been neglected and the caterpillars become nearly full-grown before their ravages assume importance, the infested trees should be carefully banded with raupenleim, bodlime, tar, ink or other sticky substances. The insects should then be jarred or poled from the trees and at once sprayed on the ground with strong kerosene emulsion. This emulsion will kill all caterpillars with which it comes in contact while the sticky bands will prevent the caterpillars ascending the trees. To make the emulsion there will be required:

$\frac{1}{4}$ lb. hard soap cut fine,
2 qts. boiling water,
1 gal. kerosene oil.

The soap should be dissolved in the water and the oil added, the whole being stirred or churned until cool. The emulsion may be well mixed by pouring it from one pail to another, letting it fall with force. For ordinary purposes it is diluted at the rate of one part to nine of water, but to destroy the brown-tail moth larvæ one part to six of water will be necessary.

Some European authors recommend the collection and destruction of the cocoons and egg masses, but these measures hardly seem advisable to the writer. The cocoons shelter innumerable

parasites whose work is of great assistance. Thus over forty of the little *Diglochis* parasites have been found in a single brown-tail moth pupa. These beneficial insects emerge from the early formed pupæ in season to attack the later caterpillars or pupæ. Farther, the cocoons cannot be handled without danger from the irritating hairs. The destruction of the egg clusters is a most arduous undertaking and one that cannot be done completely. Winter work will be necessary to clear the webs from the tops of trees where egg-clusters cannot be detected from the ground.

The feeding of the caterpillars in the fall often assumes great importance. Last year at Allston pear trees stripped in May were again defoliated in September by these insects. Since the arsenate of lead adheres so well to the foliage, trees well sprayed with it in early summer will be largely protected from the fall brood. Otherwise fall spraying is advisable, using the insecticide as recommended for the spring application.

Systematic work over large areas is necessary if this pest is to be controlled. That such a result is possible is shown by the success attending the work carried out by the Gypsy Moth Committee during the years 1898–99 when damage by the brown-tail moth was kept at a minimum. How to best deal with it now is a problem agitating many cities and towns. Municipal control seems to offer the greatest promise of success at present. A coöperative effort of all property owners cannot be obtained. Individual work is desultory and seldom thorough. The municipality has the organization and the machinery by which the work of web destruction can be thoroughly and systematically accomplished. That the moth is a pest, even a public nuisance and a menace to health cannot be doubted. Its injuries to property and persons constitute a direct tax upon the community. Why should not the municipality take charge of the work of destroying it, meeting the expense from the public treasury? It would seem that if a pest of this kind is repressed and kept confined to one part of a municipality, all the property owners benefit thereby and can well afford to pay a slightly increased tax as a premium for immunity from loss.

This problem soon will be one of the live questions of the day in this State. In the meantime we can at least keep our own trees clear from the moth, help our neighbors by information and

advice, and aid every promising endeavor to secure a thorough control of this imported pest.

We may well accept the quaint counsel of Salisbury who, studying the habits of this beautiful yet pernicious insect nearly a century ago, wrote :—

"We must observe that whilst we read in nature's book, every page affords instruction ; . . . . and as men are rational beings we should always bear in view the determination as expressed, 'By the sweat of thy brow,' etc. And should know that it is expected of us to curtail the superfluities of nature's works and render those things committed to our care as perfect as our intellect and industry will admit."

Discussion.

Varnum Frost said that farmers kill everything that comes along with Paris green, and asked if that would not do for the brown-tail moth.

Prof. Kirkland replied that it would but it is apt to burn the foliage.

Michael Sullivan asked why the brown-tail moth is more numerous on the pear than the apple.

The lecturer said that we find more elm leaf beetles on English than on American elms and the potato beetle is more numerous on the potato than on the tomato and egg plant ; it s the adaptation of insect to food plant.

Thomas Harrison asked if the English sparrow should not be protected, and Prof. Kirkland said not necessarily, for the few moths he kills will not atone for his many other sins.

Prof. L. O. Howard said he was extremely interested in the lecture. He had been horrified to find masses of the larvæ and thought we have a serious problem before us.

Mrs. E. M. Gill told about using the Waters' pruner and cutting off the infested branches.

The lecturer said the importance of destroying the moth should be emphasi ed by the press. There should be a law to compel municipalities to keep street trees clean. The Common and Public Garden are free from the brown-tail moth but the elm beetle is coming and the trees will have to be sprayed.

Mr. Sullivan said that the tree wardens have authority in regard

to streets, etc., but the problem is what to do with individuals. The market gardeners combatted the gypsy moth appropriation because it provided only for one insect; their idea was to make it general. He thought that a way can be found to protect unimproved lands. Much money has been expended with but little result. He believed that the views of the opponents of the gypsy moth work will change in regard to caterpillars, canker worms and, indeed, all insects.

Mr. Frost said that lice do the most harm. They are the smallest of all. He opposed the gypsy moth appropriation. What can you ever get done by a Commission? The State Board of Agriculture can be trusted.

Hon. Aaron Low, Chairman of the Committee on Lectures, announced that the abstract slips of the lecture would be ready for distribution at the lecture next week, when he hoped for a larger audience.

Thomas Harrison moved a vote of thanks for the interesting and instructive lecture, which was unanimously passed.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 18, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

HORTICULTURAL POSSIBILITIES FOR NEW ENGLANDFARMS.

BY PROFESSOR F. WM. RANE, NEW HAMPSHIRE COLLEGE, DEPARTMENT OF HORTICULTURE AND FORESTRY, DURHAM, N. H.

When we scan the whole field of our six states and allow ourselves to comprehend their combined length and breadth of area, hills and dales, mountain tops and seashores, forests and tillable lands, rivers and ravines, how we well up with pride and reverence for our old New England.

* At Chickering Hall.

I am to talk to you today about the possibilities for horticulture on our New England farms. When I speak of the New England farm you will doubtless think the term so broad in its application as to be meaningless. The Connecticut farm and that in Maine, for example, are perhaps altogether dissimilar, and for that matter any two farms in different sections of the same state have many points of difference. By the New England farm, after all, the average New Englander comprehends very well what is meant.

The average New England farm is not looked upon generally as offering the inducements for a successful vocation that it should. There are many reasons given for this state of affairs which I cannot discuss at length at this time. The thing that interests us most today is how to improve upon our present conditions generally in our rural sections, or in other words, how are we to improve New England farming so that, as time goes on, it will be demonstrated that the trend is not to the cities but that the New England farm offers equal inducements. The signs of the times are we believe wholesome, as what is being done in the way of education through our agricultural colleges, experiment stations, the grange, the agricultural press, farmers' institutes etc., will bring ultimate results. No one can farm haphazardly, in the old fashioned go-as-you-please way, and expect to compete as a business with other professions. Even in other pursuits as in manufacturing it is the modernly equipped machine that is found to be most economical, and those who stick to the old fashioned kinds drop by the wayside. I don't mean to be understood to place farming upon such a high basis that but few can successfully attain to it, but to emphasize that the New England farm must receive that attention and handling which modern methods suggest for expected success. We do not expect a man who knows nothing of the theory or practice of engineering to succeed as one who has shown that interest; none the less can we expect a person to become a good farmer unless he has the natural instincts of success or acquires them through perseverance.

The backbone of any nation, generally speaking, is its agriculture. Go where you will and you will find this statement to be true. Where a nation has neglected its agriculture and has not kept abreast of the times it is traveling toward destruction and

decay. The more we study the rise and fall of the Roman empire or the history of any of the older nations, the more easily we recognize these facts. Look, for instance, at the ruins of the great irrigation canals of the old world, especially those of Italy and Spain. These designate better times, a fruitful and bounteous harvest, green fields, and a land filled with a prosperous and highly-civilized people. The agriculture having since been neglected, however, it is needless to ask for the results.

To show that agriculture is of the greatest importance to a country, we need only to cite instances such as our great states of Ohio and Colorado, the one noted for its boundless coal and oil fields and the other for its vast resources of mineral wealth. We then realize that these great and valuable productions, for which these states get their reputation, do not begin to amount to their yearly agricultural resources. Take agriculture out of a country and what is left? A rocky, barren country; valuable minerals may abound, but even then, what kind of a civilization? Every one knows.

But what has this to do with horticulture and the importance of it to the New England farmer? Agriculture includes horticulture in the broad sense, and still further, a high degree of agriculture must be attained before horticulture can exist, which, in a way, is a more concentrated form of the same.

Horticulture, to my mind, is the cream of agriculture. In a comparatively new country like ours, it is perfectly natural that general agriculture should first prevail and horticulture come in when the country has been more fully opened, and an æsthetic taste established.

Horticulture is distinguished from agriculture in that it comprises the following branches: (1) Pomology, or fruit growing; (2) Olericulture, or vegetable gardening; (3) Floriculture, or the raising of flowers; and (4) Landscape Horticulture, which approaches landscape gardening. These are the subjects that come under my jurisdiction as professor of horticulture in the New Hampshire College at Durham, New Hampshire. We devote at least an entire term to each subject. The four year students of course get much more.

When pomology is taken up, the subject is divided into three main divisions: (a) viticulture; (b) orchard fruits; and (c)

small fruits. The grape being the first fruit to study is taken up in the following order: history; methods of propagation; soils and location; fertilizers; planting; culture; pruning and training; extent and importance of the business in New Hampshire, United States, and throughout the world; varieties; insect enemies; fungous diseases; remedies; harvesting; marketing etc. By the time the following subjects have been finished, viz.: the apple, pear, quince, plum, peach, cherry, apricot, nectarine, all of the tropic fruits, the various kinds of nuts, not to say anything about the small fruits, as raspberries, blackberries, currants, gooseberries, strawberries, cranberries etc., a person ought to have some sort of an idea of the scope of pomology. Similarly, I might take up the ten classes of vegetables and show the scope of olericulture or equally that of floriculture and landscape horticulture, leaving out entirely the question of greenhouse construction and management, the wholesale seed and nursery businesses, and such important studies as the evolution of plants, plant breeding etc.

We cannot help but recognize, therefore, that horticulture extends over a broad field and contains much in its grasp, doing much for a nation's welfare and happiness. Too many people think horticulture is simply fruit growing; especially is this true where fruit raising is the predominating industry; others recognize only vegetable gardening as the more important horticultural operation, while the florist doubtless thinks all others are comparatively insignificant as compared with his business, where Latin names and so many of them abound. There are whole armies of men throughout our country interested in one or more of these various pursuits, and, too, generally speaking, they are of a class above the average in intelligence and, in fact, comprise our best citizens. There is something about horticultural industries that calls out the better instincts of man, due perhaps to his closer study into the great heart of nature herself. Horticulture must be considered as refining and elevating. Fruits, flowers and landscape were never intended for association with mean or ill-tempered persons. It has been said that plants and flowers are all right for women and children to fuss with, but are belittling for men. Pity on that man who cannot see beauty and

even pleasure in a well-kept house surrounded with beautiful flowers and all of the luxuries that come with farm life.

The first point I, therefore, wish to emphasize is, that horticulture for New England farmers will more than return the interest upon the investment in pleasant homes and happier lives. There is very little trouble when passing through the state to determine which homes present cheer and welcome. When on a drive with the state entomologist of West Virginia, we found ourselves at some distance from any town where we could get dinner, and we resolved to stop at the first farmhouse that looked inviting. Although we were in a fairly prosperous section we drove for a full half hour before finding a home that met these conditions. This place had a garden; the grounds were well kept for a comfortable farmhouse, and we found our judgment was not misplaced. Not only were we able to get a good dinner, but found people whom we remember as friends. Another farmhouse in the same state, which I wish to contrast with the above, is one with a single peach tree which yielded two bushels per year it is said, and the family never sample the fruit because it has such ready sale on the market. This tree was ten years old when last I knew it, and I doubt if it has ever occurred to the farmer that more would be profitable. I don't believe this is an exaggeration over what can be found on many New England farms today. If there is any class of people deserving of fruits, and plenty of them, it is the farmer and his family, and who can have them more easily?

All lines of horticulture are found in our New England States today. When we are asked to what extent these various industries are followed, however, it seems to me this question is not and can not be answered enthusiastically. True there are exceptions but from observation I believe that we drop very far short of our possibilities. When our men of apparent horticultural interests are indifferent and pay little attention to modern methods or care little for exhibits, meetings etc., wherein much good might be gained to the benefit of all, what can we expect from others?

Were our markets far distant and competition close as in many sections of the West, doubtless conditions would bring out our keener business methods, but is this any reason why we should

be any the less careful about our opportunities? I can see little reason for the existence and great good of strong meetings in one section less favorably located, while in others with great natural advantages comparatively so little interest is taken.

During the past few years work at the experiment stations has, we believe, awakened more or less interest, but much of the time has been spent in finding out to what an extent the horticultural interests really prevail in various sections.

The possibilities in horticulture for New England farmers I believe are almost unbounded.

Were our people aroused to the interests of horticulture and would they devote an equal amount of attention to studying out the problems in horticulture as they have in dairying, I predict that for the time and money invested the results would be even more profitable. To demonstrate, I ask our agriculturist how much is made per cow per year, over and above cost of feed, shelter and labor, and I am told that, on the average for the country, nothing is made, as it is estimated that a cow must produce 3,000 pounds of milk to meet her expenses alone. Whatever is produced, in other words, over and above this amount, therefore, may be considered as profit. I do not care to go into the discussion of the dairy problems, nor throw any cold water on the enthusiasm along this line of agricultural progress in which New England deservedly ranks well at the top, but to emphasize further by comparison for the benefit of horticulture. I ask if a good thrifty Baldwin apple tree does not bring in as much profit as a cow. I doubt if I could get many in this audience to exchange a cow for an apple tree, but if figures be true, and the one under comparative conditions is as profitable as the other, I say, give me the apple tree. I am sure that while getting up at four o'clock in the morning, or tending cattle all winter is not a hardship to a man who is used to it, nevertheless most people would prefer going to work at seven o'clock. On the other hand an apple tree amounts to comparatively little, if it receives no care. With a little care, however, what a liberal response! After a Pomona Grange, attended a few weeks since, various farmers said that had it not been for their apple crops from time to time, they could not have kept out of debt. Upon inquiry, however, I found, as is generally the case, their orchards were but indifferently

cared for. Another man at this same meeting informed me that his young orchard which he set in 1891, and had given good care, yielded twenty-five barrels of fine fruit in 1899.

When I was out with the State Board of Agriculture attending farmers' institutes in the fall of 1896, the season of our over abundant apple crop, the subject given me to talk upon was "orcharding" and each time when introduced a contemptuous smile was easily detected throughout the audience. Through my discourse at that time I endeavored to overcome the mistaken idea that because that season was an off year with its over abundant apple crop, it was no reason why in years to come, the crop would not justify itself. It is only by looking at a business like that of apple growing, for a period of years, rather than a single one, that we get an idea as regards fruit growing. I remember making the prediction at that time, that a period of low prices might result in a benefit to the industry, for larger export trade was made that year than ever before and, as well, an undoubted increase in home consumption. This tends to strengthen the demand for future crops. It is needless for me to ask if these predictions have come true. In 1898 we sold from our old trees at the college alone five hundred dollars' worth of apples, and these trees are far past their prime of life. The season of 1899 we secured about an eighth of a crop which brought good prices. In 1900 we again sold a large crop of fine fruit at good prices, and the past season our crop was light.

I mention our own experience because it represents fairly well the remainder of the state. Many instances have come to my notice where in the year of over-production, a few people in various sections cut down their apple trees on account of their great discouragement. Is it necessary for me to repeat the old saying "not all fools are dead yet"?

Apple growing is an industry full of the greatest of possibilities, well worthy of more attention by the New England farmer. What has been a greater blessing to western New York than her great apple orchards? I was surprised when for the first time I visited some of the farms about Rochester, in that state, and found farmers whose main livelihood came from the apple orchard. Only recently when traveling West, I by chance met a large apple buyer and cold storage man. Among other things he said that

although Missouri and Arkansas can boast of their mammoth apple orchards, nevertheless four counties in New York govern the trade of the world.

The New England states are equally as well adapted to the growing of the apple as New York, and not only do I wonder why more apple orchards are not set, but as well, how it happens that capitalists do not invade our states and take away our so-called birthright. I have heard of agitations in the latter direction only during the present year. While I am enthusiastic in fruit growing, I should far rather see a strong and healthy internal growth in our state, in which the general New England home is the gainer, rather than a monopoly. When at Chester, N. H., a few years ago I had pointed out to me orchard after orchard, which were the results of the efforts of one man during the past generation. His work has resulted in this section taking preëminence in the state as an apple section. These trees are on the decline, however, at present, and unless they are replaced with new plantations it is but a matter of time when this industry has passed here. To a person who has lived for the greater part of his life in the West to come into New England and see the neglect, especially of fruit trees, which offer so encouraging returns, it is hard to understand. After living here for the past six and one-half years, and having more or less of an opportunity to visit the various sections I have become more and more convinced that for general horticulture, and especially apple growing, there are no states in the Union that offer greater inducements than the New England states. Had I the time and means nothing would daunt me from starting an apple orchard of my own; and were I a farmer, much less would I hesitate enlarging my area in orchards. It is a fact that apple trees do not come into bearing immediately and simply setting the trees in the ground never to be looked after, other than in an indifferent way, will not bring results. This sort of negligence in fact never brings results in anything. The old saying, "a laborer is worthy of his hire," is too true, and a man usually gets pay in this world in so far as he has backbone and energy to accomplish something. I often feel after talking at a meeting of this kind, that I am too enthusiastic as I ever fear lest some person may glean only that portion of my talk that will give him enough enthusiasm to set out

some fruit and then, "cool off," leaving the poor trees to linger and die. It is the man who comprehends the whole situation from beginning to end, and who begins with system and method, that succeeds. This is the kind of men we want to enlist in our fruit raising in New England. I am acquainted with a prominent actor who had amassed a large fortune, and becoming infatuated with a certain inland watering place while touring there in summer, finally concluded to purchase a farm facing the lake and upon this to devote his summer vacations. He sent for catalogues, far and near, and resolved to make his farm a paradise. Seeds, fruits, and vines of all descriptions came pouring in by freight, express, and mail, and all hands were put at work, the actor among them, to set them out.

It is needless for me to say the outcome could have been easily foretold. It was not until some two or three years had elapsed that the proprietor awoke to a realization of what such a thing means. The farm has been sold, the actor no more enjoys his former pleasure, at this particular place; and furthermore, this instance has been a drawback in many respects in that section. People say what is the use of going into fruit raising, and point this instance as an example. I mention this to show that a person should comprehend and understand his business, whether it be horticulture (fruit growing) or otherwise. We may have plenty of literature on the subject also, and even then these mistakes like the one alluded to can be made. Literature is of little account unless it is read and digested. I was at a grange meeting and talked upon the strawberry; one of my attentive listeners asked several questions, and finally asked why the experiment station did not print and send out such information. I answered that such had been done in this very instance. Upon further investigation I found this person's name upon our mailing list, thus demonstrating that this very information was already available in his own household.

Examples like this convince me that discussions at our granges, institutes and meetings of this sort are necessary. Many listen who will not read.

As to other fruits than the apple in New England, while perhaps they cannot be recommended for so general a crop for all

farmers, nevertheless, they should be given due consideration and have their place on our farms.

General horticulture upon the farm must commonly be considered of second importance. In order to get any results there must be a definiteness of purpose. What to grow will depend upon a person's tastes and likings. One person will make a success with one thing and another with another, but there is something in all lines for the business person.

Horticulture and agriculture many times go together, and the two make a success where either alone might fail. Each person must necessarily study out his own best conditions. Dairying and gardening go well together; where it is necessary to peddle milk the same wagon will carry the vegetables to market. Other combinations can be made as gardening and pig raising, chickens and plums, and general farming with orcharding.

To make a success in anything, I care not what it is, a person must have a comprehensive idea of it. With this well understood the subject before us, "Horticultural possibilities for New England farms," may be considered under the following heads:—

1. Definiteness of purpose.
2. Basis of estimation.
3. Knowledge of modern culture.
4. Study of marketable varieties.
5. Executive ability in marketing.

As farmers we should have a definiteness of purpose which shows itself in our system of rotations, adaptable crops, etc.

With up to date methods of farming I am sure horticulture will appeal to us in some of its various forms, and it is only those of us who attain to this degree of proficiency that will make much success. A poor farmer will rarely make a successful horticulturist. Horticulture is more intensive than general farming, and to my mind is the cream of agriculture. It may be that horticulture will remain of secondary importance, as it is today on our farms, for some time, but the thing of utmost importance is that whatever is attempted should be with definiteness in view. If, in spite of our neglectful methods, fruit growing brings the most profitable crops found on many farms today, what, I ask, can we make of it if given more definite consideration? With a wholesome public sentiment in favor even of apple-growing, to say

nothing about the innumerable other horticultural crops, New England can be made a country unsurpassed.

We can say without hesitation that the apple crop is a sure paying crop everywhere in New England. Of course different sections differ more or less locally as to soil, exposure, etc., but by studying the existing conditions the problem can be easily solved. With the rapid development or evolution of American fruits there are varieties adapted to all conditions of soils and climates. With the introduction of Russian blood we have varieties of apples and cherries that withstand even the severe winters of northern Vermont, New Hampshire and Maine. Already we find such varieties of apples as the Bethel, Arctic, Oldenburg, Mackintosh, Wealthy, Pewaukee, Wagener, Scott's Winter, St. Lawrence, etc., coming from these sections in wholesome competition. This is indicative of what can be accomplished when men set about it to overcome obstacles. I attended a local fair at Bethlehem, in the midst of the White Mountains, a few years ago and to my utter surprise found that the horticultural displays of not only flowers and vegetables were fine, but their fruit represented as many varieties and exceeded in display, anything that I saw that season. I was informed that the Baldwins were grown in a protected place, but the other fruits simply received the ordinary care customary in that climate. When such a display can be grown in the heart of the White Mountains, we need not complain of our conditions elsewhere. One man is reported as growing a few acres of strawberries that year, and selling the product at an average price of twelve and a half cents a cup which is equivalent to a pint. Surely strawberries are hardy everywhere and it only demonstrates what the possibilities are in cold climates with this crop. Mr. Howe of Lancaster, New Hampshire, is a large apple grower in that region and says the Bethel apple is to that section what the Baldwin is to southern New England. When I was on a lecture trip with the Maine State Board of Agriculture last summer, I found that the Arctic apple is being very largely planted in the north-eastern part of the state. I was surprised also to find, when on this trip, a gardener at some distance north of Bangor growing and shipping all kinds of small fruits for the Boston market. I might go on further to demonstrate that even in our colder sections of New England the possibilities

for successful horticulture are even greater than is generally supposed. Here as elsewhere the man at the helm in the larger half of success.

For central and southern New England little need be said upon what we can grow here, before such an intelligent audience as always forms the constituency of the Massachusetts Horticultural Society. This Society has listened to such men as Hale of Connecticut on the peach, and others equally experienced and successful with other horticultural crops. The results of such men assure us of the success of the specialist; now with a definiteness of purpose and an understanding of their culture these products can be raised equally successfully in a limited way on the average New England farm.

(2) Can we estimate with any degree of accuracy what can be expected in the various pursuits on the New England farm? This is a question well worthy of our consideration. I thoroughly believe it is our duty and privilege to estimate and figure out our chances for success or failure in all farming undertakings. No one should undertake a business who has not the possibilities at least for what he seeks. To demonstrate, we hear so much today about farming not paying from men who are already engaged in it. I have taken occasion to examine into many individual cases of this kind and find the conditions for success are impossibilities to begin with. One man whom I know has a one hundred acre New England farm, two-thirds of which is forest or natural pasturage, so called; the remainder has been under cultivation at some time or other, but nine acres are all that he tills each year. Now the forest land furnishes him his fuel and not much more under his method of management; the meadow his hay, which about compensates for the labor in harvesting it, while the nine acres under cultivation must produce his salary. He raises an acre or two of potatoes and the remainder, with the exception of a small farm garden, is devoted to ensilage corn. He makes milk for retail trade, carrying about ten cows, has a span of horses and thinks he needs a cheap hired hand. This man is staring providence in the face and attempting an impossibility when he courts success under his conditions. His taxes, horse and cattle foods, hired labor, depreciation in buildings and tools, etc., amount to more than his income. He ought to know that he is attempting

an impossibility, and finding fault will never overcome his conditions; think of it, only nine acres, which if it produced maximum crops each year would not give him cash net returns of over $30.00 an acre for the crops he is raising, or $270 possible income for the year.

If a man expects to make a success he must form some idea of his real worth, and what he ought to make as a salary for his own satisfaction; then study out what he must do in the way of farming to accomplish the desired results. If I consider myself only a $300 man and I am growing hay for market, if my land is in good heart and I can produce an annual yield of three tons per acre and this sells at say $15 a ton, it will take only ten acres to satisfy my demands, allowing one ton per acre for expense in harvesting. If I will not be contented with less than $1000 or $2500 a year I must greatly enlarge my base of operation.

Here again is where horticulture comes to the New England farmer's assistance if he courts it. If the nine acre man had devoted his attention to some horticultural crops, such as an acre or so of currants or combination of any of the following crops as raspberries, onions, squashes, cabbage, tomatoes, celery, cucumbers, gooseberries, strawberries, peas, sweet corn, etc., or orchard fruits, if well taken care of, his chances for success would be possible.

I know of one man in New Hampshire who netted $285 on currants from one acre four years after the plants were set. An acre of currant bushes set four by five feet takes two thousand one hundred and seventy-eight plants.

Mr. Crawford of Ohio has raised seven thousand quarts of strawberries on a single acre. You and I ought to raise one-half that amount or three thousand five hundred quarts which at ten cents equals $350.

Muskmelons in hills five by six feet make one thousand four hundred and fifty-two hills to the acre, and the small Netted Gem kinds will average ten or more to the hill under good culture or fourteen thousand five hundred and twenty melons, which at four cents apiece would bring $580.

Sweet corn planted three feet by nine inches allows nineteen thousand three hundred and sixty stalks to the acre or one thou-

sand six hundred and thirteen dozen, and if sold at eight cents per dozen gives $129 per acre.

Six hundred bushels of onions per acre is not an unusual yield, and the average price for them is generally good. I know of one man whose success with onions has been the means of awakening the interest of many others, and resulting indirectly in the whole community becoming prosperous. Another New England man of my acquaintance has averaged more upon a very small area of land, the main crop of which is onions, than any general farmer about him whose invested capital is from ten to fifty times as great.

Squashes, although they have been hard to raise during the past year, nevertheless offer good returns. The sale for scalloped and crooknecks is usually limited, but the early marrows and later sorts give reliable returns.

Celery is a crop that if well grown, and the culture is simple, usually pays well. An acre of celery set in rows three feet apart and six inches in the row will contain twenty-nine thousand and forty plants or two thousand four hundred and twenty dozen, which, should they bring only twenty-five cents a dozen would give $605 returns. Celery is also a second crop, an early crop of something else being taken first. A New Hampshire man, not a farmer, tells me that he raised in his small garden on a city lot the past year $110 worth of celery on a sixty by sixty foot area or at the rate of $1400 an acre. The same season he raised two outdoor crops of heading lettuce on a bed six by sixty feet, the sale of which brought $15 or at the rate of $1815 an acre. While this seems large it only means a price of about two cents a head and a square foot of space to grow it in. His market was simply the retail grocery stores of Laconia, New Hampshire, and not fancy prices.

Cabbages pay better than most people realize, and what farmer cannot raise them. Set two by three feet, an acre requires seven thousand two hundred and sixty plants. The price per head or pound varies greatly but anyone can easily estimate his possibilities with this crop. Last spring we grew the newly introduced Early Spring variety, setting it two by two and a half feet apart, and as the heads averaged five pounds and were round and early, we realized three cents a pound for most of it, which was at the

rate of $1305 an acre. Even at two cents a pound it brings $870.

Tomatoes are as commonly used as almost any crop grown. Although the tomato is one of the rankest of plants and an assured producer, it is ever in demand in New England. Even with an increased demand for the canned product, which largely is shipped into New England, our local markets continue firm. Not only do we find a market for all the ripe fruit but I find gardeners who are growing the late Buckeye State variety simply for green tomatoes. The green fruit when well graded brings fifty cents a bushel at retail or forty cents at wholesale. Five hundred bushels per acre of green fruit is a fair estimate which at forty cents equals $200 which can be relied upon. For ripe fruit the price will average seventy-five cents or more for the season. Our Earlianas, one of the newly introduced early varieties, sold during the fore part of the past season at $3 a bushel.

Small fruits of all kinds sell well here in New England. I have already referred to the red currant, but raspberries, both the red and black-caps, are in good demand, and from my experience usually sell for a third to a half higher price per quart than in the West. Blackberries and gooseberries are often not to be had in some of our fairly good sized towns.

There are many other vegetables that I can not take the time to emphasize here, which can be made paying crops in a limited way if not on a fairly large scale on our farms. Bunch beets sown in rows sixteen inches apart and thinned to three inches in the row will give forty-three thousand five hundred and sixty bunches of three beets in a bunch to the acre. These, if sold at an average of three cents a bunch, give $1306.80 as the returns.

The plum crops should receive more attention generally on our farms. While the black knot, plum curculio, and fruit rot, are somewhat troublesome, they nevertheless should not discourage anyone if the trees are given the necessary care. At the New Hampshire Experiment Station we have fruited Burbanks at the rate of one and one-half bushels on five year old trees; and I was interested to note an article from Mr. A. A. Halliday of Windham County, Vermont, in a recent publication, stating that he had secured as high as seven bushels per tree from six year old Burbank trees. When we realize that one tree requires an area

of only sixteen by sixteen feet, or at the rate of one hundred and seventy trees to the acre, surely the returns must be good. Other varieties of plums as Abundance, Lombard, Chabot, etc., are equally good.

We have one man at Wilton in our state, who raises on an average eight tons of grapes a year, and has had success in growing this fruit for the past twenty years. Some think the grape not adapted for many sections of New England, and still others think that even if they could grow them, they would be unable to sell them on account of the competition with the quantities of this fruit that come into New England from other states. I believe both of these notions are erroneous. Adaptable varieties can be grown in most sections if properly handled, and there is always a loyalty to home grown fruits. Mr. Bachelder, the man referred to, tells me that all of his eight tons are sold within a radius of five miles of his place. The Moore's Early, Worden, Wyoming, and Green Mountain have all done well at the New Hampshire Experiment Station.

(3). There is little reason why a man with any interest in his calling should not be able to inform himself in regard to the principles of the modern culture of any of our horticultural crops. The days of apprenticeship methods of finding out how to do things are relegated to the past; today we have plenty of literature and the main test is putting it into practical application. Culture, however, means much more than we are liable to credit it with. The culture of any plant means ideal conditions for its development for whatever purpose desired.

(4). Too much attention cannot be given in studying varieties. These are changing constantly, and it is highly necessary that we take advantage of those that are best adapted to our conditions and the markets.

(5). Executive ability is needed upon the average New England farm, for success, as much as it is anywhere. The average New England farmer needs to study business methods, and horticulture, with its greater intensiveness and variety, will assist very much in testing the business ability of men everywhere should they engage in it. Perishable fruits or vegetables demand active business methods in handling at the right time, while the other farm crops like hay, milk, beef and wood are handled "any old

time," as they are staple commodities. Business methods stand for a large share of success in anything, and it must not be lost sight of on the New England farm.

Horticulture on the farm has its place, and should not be neglected. It pays for family use if in no other way. Horticulture on the farm pays for the education of the young. Horticulture on the farm pays, for it keeps the boy there. Horticulture on the farm pays, for it makes the pocket money. Horticulture is education in plant life. For example, grafting, pruning, budding, propagation, rotations, varieties, soils, fertilizers, cultivation, etc.; these and many more can be studied. It is with these and many other advantages that a much broader horizon is attained. Study possibilities and aim high. Horticulture demands time. Peter Henderson recommends that seven men and three horses should be had to run a market gardening industry of ten acres successfully; and that when embarking in such an enterprise a capital of at least $300 per acre is necessary. One thing that ever needs emphasizing is, do not attempt too much.

It has not been thought advisable nor is it possible to go into other than a general discussion of the subject of "Horticultural Possibilities for New England Farms" in the short time allotted me. Such subjects as details in small fruit growing and various other vegetable and fruit crops, not to say anything about general floriculture and innumerable other questions of horticultural interests, cannot be touched upon; they in themselves would each require much time and afford material worthy of much consideration.

In closing I simply desire to say that under proper husbandry, and modern methods, I believe that we at present little realize the possibilities of horticulture in its various branches as adapted to the conditions of the New England farmer.

Discussion.

A gentleman said that there are some farms that will support a cow but will not support an apple tree. Most apples have failed with him. He has raised the Bethel and Jonathan. His grapes bear abundantly but do not ripen. His farm is about forty miles from Lake Memphremagog.

The lecturer said that Professors Craig and Saunders believe in the production of varieties that will be adapted to these localities. Consider what has been done in Minnesota. The majority of the Russian apples were autumn varieties but we are getting now varieties of all seasons.

William C. Strong said that he was born in the same region as the former speaker (Hardwick, Vermont), and that the apple trees there were vigorous and abundant in produce. He said that there was one important point which had not been emphasized: — the quality of western apples does not compare with the solid fruit of New England which is superior to almost any fruit in the world.

In answer to a question of Thomas Harrison regarding fertilizers, Prof. Rane said, Don't overfeed with nitrogen. We do not want trees that take a thirty foot ladder. When the tops are formed substitute potash and phosphate for nitrogen. Grow fruit instead of wood.

Michael Sullivan asked whether the lecturer would recommend the continuous culture of apple orchards to get good fruit.

Prof Rane said that while trees are growing they need continuous culture to keep them going. After fifteen years the question of culture would be left to the man's own judgment. If the trees are hardy and healthy they will need but little fertilizer. Mr. Sanborn says that his hay crop on nine acres has paid, and his apples also, but he ploughs up when his trees show signs of needing it. One ton of hay per acre will not pay, but three tons will, and if you can get them and a crop of apples at the same time you are so much better off.

Mr. Sullivan said that eight years seems a very short time for Baldwins to come into bearing. He has had them in twelve years. He raises vegetables but finds his fruit quite as profitable as any part of his business.

President Hadwen said that the product from cows sold every day while apples sold once a year only. A young man with a family needs an income every day. His experience was that he needed both. One advantage in having apples in grass land is that you can get a crop of both if you feed for both. Apples from grass land keep better.

Thomas Harrison asked the lecturer what to do with land that has only an inch of soil.

Prof. Rane replied that a man must study his farm, and suggested sheep raising. Where sheep cannot be raised on such soils forestry comes in. Thin and light land should be turned over to forestry.

He said that he did not want to leave the impression that he was not in favor of a few cows to supply the family.

Varnum Frost said he thought farming was overdone and played out in New England. You cannot get more than a new dollar for an old one; last year, not more than seventy-five cents. The prices named by the lecturer are three times what we can get here. He thought the President was correct in regard to the keeping qualities of apples in grass land.

Prof. Rane said that the New Hampshire Experiment Station has paid all its labor by its products.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 25, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

THE BUSINESS END OF HORTICULTURE.

BY PATRICK O'MARA, New York, N. Y.

Ladies and Gentlemen:—

When our good friend Mr. Low invited me to read a paper on some subject connected with horticulture I explained, as I did once before, that while being grateful for the honor, I was at a loss to know upon what lines I could prepare a paper worthy of the attention of this Society, second as it is to none in the world. I solicited his advice and the advice of the committee through him and was further complimented by the assurance that anything I should prepare would in all likelihood be satisfactory to them. Being thus, so to speak, at my wit's end, I chose "The Business

* At Chickering Hall.

End of Horticulture" as a title for such observations as I might offer you.

I will stick to the text as closely as possible; but at the very outset the temptation to wander is irresistible. Some may ask if I consider the end of horticulture to be business. This prompts me to observe that I am not bold enough to prophesy the end of horticulture. It also prompts me to observe that since coining the title I have been industriously engaged in a mental quest for the business end of it, but up to the present moment I have not run down any end that looks like it; or tied a knot on it. The quest for the business end of a bee or a mule would be a simpler matter.

An acquaintance of mine in the trade once sagely remarked in my hearing that in his opinion any fool could grow good plants, but that it required a man of great wisdom to sell them. It looked to him as though he had certainly discovered the business end. I may remark parenthetically that the gentleman referred to was a grand and gloomy failure in both departments; he is a fair sample of the "know-it-all." There is a story told to the effect that a young man who was ambitious to succeed in business once obtained the ear of the late Commodore Vanderbilt and sought his advice. He is reported to have asked him whether the secret of success in business was knowledge or some fortunate inspiration. The gruff old Commodore tersely replied; "No, my young friend, not inspiration; perspiration, sir, perspiration." And it may be truly said that if the business joint of horticulture is anywhere in particular it is at the elbow and it should be well greased. Eternal vigilance is the price of much that we have and hold; it is particularly the price the successful horticulturist must pay. The "art that doth mend nature" is not one for the *dilettante;* it is one for the sober, steady, persevering, painstaking, intelligent worker. The cry goes up from many who fail: "I have no luck with my stuff like so-and-so." That wail is even heard from the professional florist who ought to know better. If he watched Messrs. So-and-So he would discover that they are men who studied cause and effect and had the sense to apply as well as the energy to execute. They might perchance be unable to prepare an exhaustive treatise on structural formation of plants or give an analysis of the soil; their methods might be

rule of thumb ones; their school might be, and undoubtedly in ninety-nine cases out of a hundred is an empirical one; but they obtain gratifying results and that is the main point. Doctors' children are not always the healthiest. If there is any calling, trade or profession which requires keen discrimination, quick perception, intuitive grasp and prompt decision in a greater degree than another, it is the horticulturist's. He is dealing with the forces of nature, his charges are mute and cannot announce when something has gone wrong. He must see it. He must do more than that; he must know, if he is to be successful, what is likely to injure them and see that such is avoided. An ounce of prevention is worth a ton of cure in horticulture. Locking the stable door after the horse is stolen is mighty poor satisfaction. These random remarks I trust will be found to have some pointed reference to the "business end" of horticulture.

My experience in the trade has been exclusively along the lines of commercial floriculture so that necessarily my observations will be mainly confined to matters less or more intimately connected therewith. I have enjoyed the advantage of some experience in other branches. I've rubbed elbows with that interesting personage known officially as the "Ornamental Horticulturist," or, as one of my more learned editorial friends would have him dubbed, "The Ornamentative Horticulturist." A few years ago he was, I suppose, the artist who made a striped elephant with a fluffy tail and planted him on the lawn, who made butterflies and ships, birds and beasts biped and quadruped, who had wheels in his head and got rid of them by expressing himself in wonderful convolutions, rings eccentric and concentric; all in plants that outrivaled Joseph's wonderful coat of many colors. The pity of it is for one of the business ends of horticulture that his tribe did not keep on increasing. I am reminded of a story in connection with that branch of gardening. An itinerant disciple of the "art that doth mend nature" was called in to lay out some beds on a modest lawn. His "art" had not risen above round, square, and star-shaped beds, so when his whilom employer expressed a desire to supplement them with an oval bed he looked embarrassed; he was not quite sure what an oval bed was. It was explained to him that it was egg-shaped and he understood. When the owner came around the following day and looked at the oval he was dis-

appointed; it was overweighted at one end. He reproached the "artist" concerning it and a great light broke in upon him when he was told by him: "Sure, sir, you told me to make it egg-shape; and isn't an egg bigger at one end than the other?" There is some humor even in horticulture. A prospective purchaser went into one of the seed shops, not a thousand miles from here, where garden and farm implements were displayed and asked a young clerk if he sold whiffle trees. He was gravely informed that they did not keep them there but he would inquire of the nursery department. Another purchaser who was giving an order and soliciting advice from a clerk as to quantities of seed wanted for certain numbers of plants finally ordered a pound of raffia. The clerk thinking he was ordering too much of it gravely asked him how many plants of it he wanted to raise? A tree agent some years ago astonished the home office with the quantities of tree pæonies he was selling. Upon investigation, it developed that he was recommending them as shade trees, which had in the summer the wonderful flowers shown in the picture book which he carried. These are incidents connected with the business end of horticulture and they do much to relieve the tedium of the day and hour.

Now, let us consider where the business end, or rather ends of horticulture are to be located. First in importance is the seedsman. Even here there are to be found differences; all do not travel on the same road. There is the box trade for instance, a separate and distinct branch. Long before a town can support a seed store the box makes its appearance. The druggist, the general storekeeper, the jeweller, the grocer, almost any shopkeeper will be the distributing agent for the seeds. The growth of this branch of the trade is something marvelous. In one generation, we have seen one firm expand from a little shop which barely paid the living expenses of the founders into a great institution, which ranks high among the finest commercial houses in the country. So systematized is this particular branch that the seed box follows close upon the heels of the settler into the most remote quarters. Not many years ago I was in a thirty day old town seventy miles from the nearest railroad station, yet the seed box was there before me. Another branch of the trade was represented among the first settlers there, viz.: the seed grower; so

we see that two branches of horticulture are found in the forefront of the developing line. The seed grower is a horticulturist, who does not figure very prominently in horticultural essays, and yet he is an important factor. Many people believe that the large seed houses have one big farm where they grow all their seeds. That would be impracticable for the reason that different seeds can be better grown in different localities. Peas and beans can be better grown in northern than southern localities. California will produce better seeds of many kinds than any other part of the country. Portions of Nebraska produce the best seeds of vine crops to be found in the country. Long Island seems to be the ideal place for cabbage seed production. Portions of Connecticut are unrivalled for the quality of onion seed produced. Northern New York and Maine are unexcelled for potatoes The great Northwest has exceptional possibilities as a seed producing country. Europe still supplies its quota of seeds and bulbs, but with the vast extent of territory over which floats the American flag, with the wide range of temperature, the rich soil, and the energy and intelligence of the men engaged in horticulture, there is every reason to believe that in the near future we will not only produce all we need ourselves, but we will be able to control the markets of the world in seed production. The seed grower for the most part is a contractor, who takes the stock supplied by the seedsman and delivers the entire product. His work is supervised by the seedsman, who inspects the growing crop and carefully "rogues," that is, destroys any plants which are not up to type, which, in other words, show a reversion to an inferior type. It often happens that an improvement will be apparent in individual plants and these are carefully marked, the seed product kept separate and sown the following season. This is the source of many of the improved varieties. It is obvious that the greater the amount of care bestowed on inspection, the greater the intelligence brought to bear upon it, the better in proportion must be the result. It is upon this care and intelligence that reputation is based, hence the difference in stocks sold. The seed growers are often hybridizers, and to the patient work of these men we owe many of the improved varieties now in existence. The greatest vehicle, unquestionably, for developing horticulture is the catalogue of the seedsman, the nurseryman and the florist. The

first is beyond doubt the most important in its effects and might be called the centre from which the business ends radiate. The millions of catalogues distributed annually are an inspiration to the recipients and to the hundreds of thousands who are influenced by seeing their neighbors engaged in horticultural work. Great is the responsibility of the catalogue firms and great is the labor involved. It is undeniably the most trying of all the business ends of horticulture. The men engaged in it must be ever on the watch for new and improved varieties; they must lead and not follow popular opinion; but yet they must be cautious not to get too far in advance. They must be ready to explain why crops fail, they must be able to advise remedies, they must be entomologists, pathologists, be up in soil chemistry, and when the great extent of the country is considered, it is readily understood that the task is not an easy one. They must be ready to tell when and what to plant or sow in farm or garden from Puget Sound to Florida Keys, from Aroostook to San Diego. They must be able to tell the dear old lady what is the matter with her sick geranium or her debilitated begonia. They must be prepared to have their honesty impugned whenever a clerk makes a mistake and sends the wrong variety, they must be prepared very often for the same contingency when, from causes entirely beyond their control, crops fail, plants die or seeds do not germinate. To be successful, the catalogue man must be not only resourceful in business methods, enterprising in developing and introducing varieties of merit, but he must be optimistic, he must be able to communicate his optimism to his customers, he must be liberal in his dealings, be ever patient, be a natural diplomat, and above all things be scrupulously careful to send out only the best obtainable.

What is said of the seedsman is also applicable in a great measure to the nurseryman. The details of his business are hardly as numerous, however, consequently not as trying. His business is in a larger degree localized, which tends to simplify it. With San José Scale, Peach Yellows and other troubles incident to his stock, and the legislative efforts to control them, he is not without troubles of his own. The nurseryman, too, must be up in the "ologies," even more so perhaps than the seedsman; he must be a fair lawyer as well and be an expert in transportation matters. The lithographer and the tree agent are powerful agents

to the nurseryman. The latter armed with his book of plates wends his way over the face of the land, in many cases reviled and thust out, treated little better than the hobo. His book is sneered at, and while it may be a trifle highly colored and the size of the pictured flowers and fruits may be a little exaggerated, yet a long experience has shown that such are the best fitted to tempt the wavering into purchasing something which will really be a benefit to them. It is a case where the end justifies the means, if there ever was one. Many a garden would be given over to weeds which now supports a few fruit trees and small fruits, many a porch and dooryard would be as bare of living ornament as the proverbial "Job's Turkey" was of flesh and feather, were it not for the tree agent and his book. That business end of horticulture is not "one grand sweet song" for the men engaged in it; the emoluments arising from it will not make plutocrats of them. Be patient with them then, if not for themselves at least for the good they accomplish. The good they do lives after them; the evil is cut down and cast into exterior darkness.

The grower for the catalogue firms is another of the business ends of horticulture, that is the man who grows plants in quantity on contract, or who grows them on speculation to sell in large quantities. His field embraces greenhouse plants, fruit plants, hardy outdoor plants, shrubs, roots and bulbs. It is a safe business on the whole, but it is not capable of great development like the catalogue trade. It is generally followed and taken up by men who have some land, but little working capital, and the profits are as a rule very meager. Because of the limited capital with which it can be entered, provided the land is already secured, a great many of the smaller nurserymen, florists and even farmers have entered it of late years, and it may be safely said to be a well plowed field at the present time. Because of the fact that these men are not in touch with the retail market, they grow many things for which there is not ready sale; failing to obtain buyers for these at remunerative prices, they are frequently taken up at a sacrifice and pushed by catalogue men to the detriment of better things. I think it may be accepted as an axiom that the successful catalogue business man must be a bona fide producer, either under his own direct control or by the contract system.

This applies to plants more than to seeds or bulbs which can be treated as merchandise. The expense of catalogues, advertising, packing and growing hardly admits developing a large business by buying plants and selling again; besides there is always the trade grower who has a surplus of something inferior to offer at a tempting price and it is well to beware of "the great pennyworth."

The business end of horticulture represented by the cut flower grower is perhaps the simplest, in a business sense of any, in that the skill of the grower is the paramount issue. His product is sold for what it is worth on sight. Although the market takes exasperating tumbles, he has little if anything to do with it. He is saved the nerve wear incident to bargaining, planning how to get rid of his product, how to get his money after he has sold it, and the many and vexatious problems incident to barter and sale. I speak of the grower who supplies the large cities and consigns to a commission firm. Of course he is constantly consigning the commission man to a place warmer than his hottest greenhouse; but that is his privilege and the commission man gets accustomed to it so no one is much hurt. The market is cut out for him. The rose grower has the great trilogy of Beauty, Bride and Maid; the carnation grower has a little more vexed problem as to the varieties he will grow, but it is plain sailing for the violet grower. The various committees of the leading trade societies settle many a problem for the carnation and chrysanthemum grower; but they like to nibble at the new things so as not to be caught napping. This gives them a chance to grumble once in a while, but it makes life interesting for them. There is always something new coming up in roses, too, to vex the grower. If the man who gets hold of the new one first has a reputation and can succeed in growing it well, it is an easy matter for him to get a market for the plants and so turn an honest penny. But business instinct counts just as heavily in growing cut flowers as in the other business ends of horticulture. It was business instinct which years ago influenced one of our leading growers of roses to discard every flower which did not come up to his standard. That policy made his reputation and was the foundation of his success. It worked both ways, it concentrated his efforts on producing something up to that standard and maintaining it, while it made his reputation. It did more; it elevated the stand-

ard and really made two classes of growers in all lines of cut-flower growing, the one which aims at "fancy" flowers and which embraces all the high class establishments, the other which does the best it can and takes things as they come. I have been among growers of violets and have seen flowers discarded for slight imperfections of color which the unobservant eye would scarcely detect. I have seen roses discarded which a few years ago would have been sent to the market for what they would bring. A walk through the wholesale districts in any of the large cities will reveal to the observer stocks of roses, carnations, violets etc. which seem to be different varieties, although the same, the difference being in the growing mainly, but also in the care with which the cutting, keeping and picking are done. It is one of the most pleasant branches of horticulture and one of the most remunerative for the capital invested. It has developed fastest of all during recent years and although the constant cry goes up that it does not pay, it continues to develop. The demand for flowers is constantly growing and the laws of demand and supply are inexorable. The daily press devotes more attention to it than to any other branch and this has a great deal to do with its development. That advertisement acts also as a corrective inasmuch as it attracts to the trade people with capital seeking investment where there is certain profit. No one flower has been "boomed" more in recent years in the daily press than the violet. The ease with which it can be grown and the attractive profits resulting from its culture have been alluringly set forth by writers in the daily press, who never grew a violet and knew nothing about the subject. The result has been that many people, particularly women with a penchant for flower growing and a desire to earn "pin money," have gone into the business by the hundreds. Their usual method — following the directions of the daily newspaper horticultural teacher — is to procure sashes and a few hundred plants. The certain result is failure for they cannot compete with the professional grower who is well equipped with knowledge and has an establishment suited for the purpose. The almost unvarying result is failure for these enthusiastic tyros; but they are a disturbing element to the trade. They produce some flowers of a low grade which come in at a time when the crop is most plentiful. They also disturb the equanimity of the professional

grower by their eager appeals for advice. They disturb the seedsman and general florist in the same way, but they do not disturb the equanimity of the daily newspaper, for that institution and the young man or young woman who wrote the articles which were the cause of all the turmoil are too busy following up the political fortunes of rival politicians, interviewing actresses and society leaders, dilating on the fluctuations of copper or "nipper" stock, exploiting the careers of aspiring pugilists, revelling in the mire of the latest scandal, picturing the horrors of the freshest murder, reporting horse shows and horse races, thrilling the dear public with prognostications of impending wars, and so the florist is left to reap the troubled aftermath, while the newspaper goes to fresher fields.

The business end of horticulture represented by the shopkeeper in the large cities is a branch unto itself. Its connection with the producing branches is a very slender one and seems to be growing more attenuated. Why this should be does not appear on the surface to most of us. The fact remains, however, that as a class they hold aloof from the trade organizations when it would seem that their interests would be conserved by affiliating with them. The combination of all branches of trade horticulturists in one organization should inure to the benefit of all. The smaller cities are generally represented in the shopkeeping by the man who is himself a grower and whose wife or daughters "tend store" and make up floral designs. The great shopkeepers in the large cities are "artists" and indulge in fads. They in some cases drop their first names like the ladies' tailors and milliners.

The development of that branch has been wonderful; glass delivery wagons with gold mounted harness and something suspiciously like a crest embossed thereon have become the sign manual of the successful floral artist in the large cities. The addition of "ribbons and laces to set off the faces" of pretty flowers seems a natural accompaniment to the style of business, but it seems inconsistent with the prevailing "natural" style of flower arrangement. It is positively painful to see flowering plants swathed in ribbons and paper or tied up with bow knots like a poodle dog, and it is to be hoped the "artists" will abandon it or their patrons get tired of it very soon.

In horticulture as in everything else, the men who originate either methods or varieties are the men who shape the business, ends and all. The men who hybridize, the men who investigate, the men who do the thinking, are the men who supply the motive power for the whole. The originators of the new varieties of fruits, flowers and vegetables have not only conferred a benefit on the public at large but have made it possible for the grower to continue in a profitable business. The man who first propagated roses in summer and began a special business of mailing them showed the way to dozens of successful imitators. The man who developed the idea of the shallow bench and annual planting of roses for cut flowers was in his way a Columbus. The man who first used large glass and light frames in greenhouses made it possible to produce the quality of flowers in evidence today. The men who built big greenhouses to grow lettuce, tomatoes, cucumbers etc., made a great forward stride. The men who started the first trade journal made an important innovation. The business ends of horticulture are many and various and I trust enough has been said about them in this paper to show to those who may not have considered the matters covered that they are interesting and important, at least to those engaged in them.

Discussion.

President Hadwen said that he had not the slightest doubt that there is as good an opportunity in horticulture today as there ever was.

John Ward said that men now demand the luxuries of life which they did not have in youth. Early tomatoes used to bring from eight to ten dollars per bushel; strawberries from fifty to seventy-five cents per box. The expenses of marketing are greater today. Taxes have increased so that farmers must move back where land is cheap. It is much easier to get help now. Italian women can be relied on. He sells a large part of his crops at the stores in Newton. Any man who keeps his eyes open will find some things that he can do better than others.

Varnum Frost spoke of the armies of pests that we did not have forty years ago. We grew lettuce then without trouble. We had no Colorado beetle or brown-tail moth. Canker worms

will exterminate themselves. He said that apples have deteriorated also Hovey's Seedling and Boston Pine strawberries.

Mr. Smith said he could not go away and leave unchallenged a statement in regard to the Agricultural College. He said one could do no better than to direct an inquiry to it. It must not be judged by its weakest graduate.

Mr. Frost said that he could teach anyone present in five minutes how to grow lettuce as well as he can himself. A man born with nature's gifts need not go to Amherst. He learns more from observation than from any other source. All one needs is common sense and a tenacious will.

Hon. Aaron Low said he thought one must be posted on the means of counteracting the influence of injurious insects.

Mr. Frost spoke of a new enemy to melons. The crop has been a failure the last two years. One crop valued at $6,000 was a total failure. Amherst College experts were employed and recommended Bordeaux mixture.

W. W. Rawson said he would give a good deal today if there had been an agricultural college for him to go to. He has a son who went to an agricultural college, first at Amherst, then at Cornell University. If he had half a dozen inclined toward agriculture they would all go.

Kenneth Finlayson asked the lecturer what part electricity is to play in horticulture.

Mr. O'Mara replied that he had not had any experience in that line. Cornell University has instituted experiments but his recollection was that the benefit would hardly pay. He said he thought the average amount of sunlight provided by the Creator is what the plants need. The more sunlight the plant gets the better, but he did not know about electric light.

Mr. Rawson said that he believed that electric light hastens the flowering of plants. If his Easter lilies and lettuce are behind he knows how to forward them, by this means.

The lecturer told of a farmer who could not write his name who had been most successful. The man who has the ability to apply his knowledge will succeed. If he had been able to avail himself of the sources of knowledge he would have made as much money in half the time.

Everything sent out by the agricultural colleges is not to be taken as perfect.

Market gardening in New England is a safer enterprise than in any other part of the country. Southern market gardeners are not making the money that they do in the north. Transportation eats up all the profits.

It is not good to get too far from the city even if you have to pay more for the land.

Michael Sullivan moved a vote of thanks for the interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE METHODS AND RESULTS OF SOIL STERILIZATION.

By PROF. G. E. STONE, Hatch Experiment Station, Amherst.

In general the treatment of diseases in greenhouses demands other methods than those which out-of-door plants are subject to. In the greenhouse the gardener has the conditions largely under his control, whereas he can modify only to a limited extent the conditions out of doors. Many of the troubles with which indoor plants suffer are directly traceable to the conditions to which they have been subject and the gardener must be wholly responsible for them. We are therefore not justified in attributing the cause of such diseases to hard luck and the responsibility must be sought for in the limitations of the gardener's skill and intuitive knowledge. There are some disastrous diseases, however, with which greenhouse plants are affected that cannot be controlled by any amount of skill in handling the crop unless recourse is taken to radical preventive measures. Such is the case where the gardener has to contend with genuine parasites or with pathogenic organisms which will attack a healthy plant just as quickly and disastrously as a weak one. Such diseases are produced by the fungus *Sclerotinia libertiana*, Fckl. which causes the Drop in lettuce and the Timber-rot in cucumbers; the *Rhizoctonia* which

affects lettuce, cucumbers and many other plants; the *Pythium de Baryanum*, Hesse. which causes Damping-off in many seedlings; and the *Heterodera radicicola*, (Greef) Müll., a nematode worm that is known to affect one hundred and eighty or more species of plants and which is especially disastrous, whenever it occurs in abundance, to greenhouse cucumbers, tomatoes, muskmelons, violets, roses, cyclamens etc. It is for the control of these disastrous organisms that the sterilization method is especially adapted, and which all other methods of treatment, except for nematode worms, fail. It is also applicable to the destruction of weed seeds, and the red spider and aphis in the soil are killed. This method of treatment is not a panacea for all plant diseases and it has not been recommended by us for the control of the Damping-off fungus (*Botrytis*), or the Lettuce Mildew (*Bremia Lactucæ*, Regel.), or for other fungi which freely propagate themselves by spores. The application of chemical substances to the soil for the control of pathogenic organisms is not practicable except in some uncommon cases; neither is the fumigation method of much value, as gases are limited in their power of penetrating soils. In some cases freezing or drying the soil is effectual, but it is not easy to freeze soil in the greenhouse without removing it, and that method is too expensive, for at the present time it is far cheaper to sterilize soil than to renew it. The sterilization method is the most effectual and absolute method that can be applied in the treatment of pathogenic organisms. Where the pest is confined to the soil and does not disseminate by spores through the air it can be completely and absolutely eliminated.

Since the time when man first made use of fire to prepare his food, sterilization has been in vogue. It was, however, the brilliant researches of Pasteur and Tyndall that annihilated the theory of spontaneous generation and gave us the correct understanding of the rationale of sterilization, and the intermittent method suggested by the latter has been universally employed by bacteriologists.

Heating the soil for the purpose of ridding it of obnoxious organisms has been tested in a limited way for some years and pathologists have frequently made use of pots of sterilized soil where certain experiments demanded such treatment. Among the

first attempts to sterilize soil on a large scale in this country was one in connection with nematode worms on roses, cucumbers etc. This method was practiced in 1895 or 1896 by some florists who were so troubled with nematode worms that a successful attempt was made to treat the soil on a large scale with steam.

The treatment of soil by heat, or sterilization as it is called, has been carried on at the Hatch Experiment Station, Amherst, for some years in connection with troublesome organisms which thrive in the soil and prevent the production of healthy crops. It should be borne in mind, however, that when we speak of sterilization of the soil we do not mean absolute sterilization, but what we actually accomplish is a sort of Pasteurization or partial sterilization; in other words, our soil is sterilized so far as the presence of some obnoxious organism is concerned. Cultures of soil treated with steam which attained a temperature of 212° F. would show a considerable bacterial flora, and the subsequent and continual exposure of the soil to the air and the application of water will enable the soil to become subsequently supplied with a host of organisms which are beneficial, indifferent or otherwise. In order to obtain absolute sterilization and maintain those conditions we would have to make use of the methods employed by bacteriologists. Absolute sterilization we do not desire; and all that it is necessary to accomplish is to destroy the obnoxious pests which cause damage to the crop. A uniform temperature of 180° F. maintained for a short time would accomplish this, but in practice it is far better to exceed this temperature in order to be on the safe side.

During the past year quite remarkable strides have been made in the practice of sterilizing soils. We will now consider some of the methods and results of sterilization. On account of the extensive use of the sterilization method upon a large plan by the most efficient and practical market gardeners the process has been made very much cheaper and quickened to a considerable degree. There have been numerous methods and appliances devised that are great improvements over old ones. In the past year the amount of soil sterilized can be more intelligently estimated in acres rather than in square feet. At the present time whole ranges of greenhouses are being treated and the method has been employed out of doors to some extent.

We have been able to test a great many sterilizing appliances and have looked into the efficacy and practical utility underlying the various methods which have been in vogue. The method of treating the soil by steam to a distance of a foot or more in depth has always appeared to us as the best one to be employed, and, since the cost of such treatment has been greatly reduced of late there appears to be no longer any reason why it cannot be extensively used. The practice of applying one or two inches of treated soil to the top of the bed, while giving good results, has its drawbacks because the process has to be repeated, in order to be of any value, every time a crop is planted. The cost of treating one foot or more of soil in badly infested houses proves an excellent financial investment: for example, some houses have had the Drop in them to such an extent that fifty per cent of the plants would succumb and in some cases nearly the whole crop has been destroyed. In our own experimental house which was purposely contaminated with Drop a few years ago we have experienced a loss in some cases equal to about ninty-nine per cent. In a house containing four thousand dozen plants at fifty cents per dozen the value of the crop would be $2,000, or at twenty-five cents per dozen $1,000. The loss of fifty per cent would reduce the value of the crop to $1,000 or $500 respectively. Such a loss is the more provoking inasmuch as the maximum amount of Drop occurs about the time when the plants are mature and all the labor bestowed on the crop in transplanting, care given to the same, amount of heat utilized, and the valuable space which they have taken up is all for nothing. A house of this description was sterilized during the past winter at a cost of $100, and in examining this crop (which was one of the most perfect I have ever seen) there was only one case of disease in the whole house. This one diseased plant occurred near an iron post that supported the house and there was evidently a small portion of the soil there which had not been sufficiently treated. The cost of treating this small neglected area, however, would be very insignificant. When we observed the crop it had already been mature for nearly two weeks and was being held back for a better market which gave an excellent opportunity for any further Drop to develop if it were present. There appears to be no reason why, if a house is once treated in a manner as thoroughly as this house was, that another treatment

would not be required for some years, provided care is taken to prevent recontamination from refuse material which contains the Drop fungus. Even allowing a few contaminating areas to exist in the soil as a result of imperfect treatment it will probably be five years before the loss would again reach that amount where it would be necessary to treat the soil. It requires no argument to show that the expense of $100 for treatment in a house that would be worth $2,000 at fifty cents per dozen or even $1,000 at twenty-five cents per dozen is a good investment, even if the treatment has to be repeated each year; but on the basis of a five-year treatment which is in our estimation all that is required the investment is nearly five times as good. The increased value of the soil and the possibility of having less weeds and fewer aphis should also be taken into consideration in estimating the benefits derived from the use of this method. One experiment of this kind is sufficient to convince the most conservative market gardener of the practicability of sterilization.

The methods employed for heating the soil have been either by the use of hot water or steam with considerable variation in the mode of applying the latter. Messrs. Hittinger Bros. of Belmont have made extensive use of the hot water method and their later constructed houses have special facilities for applying this in the most economic manner. The hot water method requires the treatment of the soil previous to the putting in of each crop as only a few inches of the surface soil are sufficiently heated by this method to kill the mycelium of the Drop fungus.

The heating by steam is now done largely by the aid of perforated pipes and in some cases use is made of two-inch porous tile, although this method is not so practicable. If finely perforated tile could be obtained in the market at a reasonable cost their use would be of much more value for this purpose than at present. The various contrivances made out of perforated pipe varying from one inch to three inches in diameter and usually placed from seven to twelve inches apart are made up into frames from ten to twenty feet or more in length and into any desired width. The size and number of the perforations vary much in different appliances. Where they are rather large (one-fourth inch) they are frequently covered with burlap. In some appliances the perforations are one-fourth inch in diameter and are only one and one-half inches apart

each way; in others the perforations may be only one-eighth inch in diameter and from three to six inches apart with two or three rows of such holes extending along the pipe. Some of these appliances are not made up into permanent frames but are in sections easily put together or taken apart and are so constructed that they can be readily extended to any length or width desired. These forms are provided with headers placed transversely which are pipes of larger diameter containing perforations, and nipples are inserted at intervals which readily fit into the extension pipes. In some instances the headers are placed at each end, thus forming with the extension pipes a frame composed of a series of rectangles. In this form a complete circulation of steam can take place through the apparatus. In others the headers are in the middle and the extension pipes lead off into opposite directions. In the latter case the ends of the extension pipes are plugged with wood and no circulation of steam takes place. A form of sterilizer recently devised and advertised by Mr. G. M. D. Sargent of Belmont is built after the manner of a harrow. It consists of an iron frame eight feet long by four feet wide with twenty perforated hollow iron tubes corresponding to the teeth of a harrow which are thrust into the soil. The material most frequently used in these various forms of apparatus is iron pipe. The apparatus used and devised by Mr. Cartter is constructed out of perforated galvanized-iron tubes and is very light and easy to handle.

The methods generally adopted by lettuce growers in heating their soil is to place the sterilizer on the surface of the bed. If the bed is twenty feet wide then it would be most convenient to have the sterilizer ten feet wide and twenty or thirty feet long. This is placed midway in the bed and the soil to the depth of one foot or more is dug up on either side and thrown on top of the sterilizer. The steam is then turned on and the soil heated. After sufficient steaming has taken place the pipes can be pulled out and made ready for the next treatment. The soil previously treated is covered up with old canvass and allowed to stand some hours, after which the top portion is shoveled back to where it was taken from. Not only is the one foot or fifteen inches of top soil heated by this method, but the soil underneath the apparatus is equally well sterilized, providing too much haste is not made in removing the

treated soil. In one case that was examined where the steam was left on late in the afternoon for one and one-half hours and the top foot of soil not disturbed until the next morning we obtained the following records of soil temperature at noon on the succeeding day, or nineteen hours after the steam was applied, and five hours after the top soil and apparatus had been removed. The temperature of the soil two feet below the surface was 120° F. and one foot below the surface was 175° F. In this instance two masses of top soil were heated, the last one being left undisturbed over night. The average pressure of steam was only thirteen pounds and it always astonishes those who heat soil for the first time to find that steam can penetrate such a distance below the surface in so brief a period.

Cost of Sterilizing Soils.

In proportion as the appliances have been improved for sterilizing soil the cost of application has been greatly reduced. From reliable estimates which we have been able to obtain from practical lettuce growers and others who have heated their soil, the cost including coal, labor etc., but not the cost of tile or apparatus used, is as follows :—

In a house two hundred and twenty-five feet long by twenty feet wide, one-third of which was treated at a time by steam passing through two-inch tile placed eight inches below the surface and one foot apart and forming a continuous circuit, the cost was at the rate of sixteen dollars for one thousand cubic feet, where a pressure of steam was used varying from thirty to eighty pounds. The heating was continued day and night as this could be readily done on account of a night foreman being employed. The estimated cost of removing the soil from a similar house to a depth of one foot and placing in new soil without carting the same was at the rate of thirty-seven dollars and fifty cents per one thousand cubic feet. This house had been previously sterilized, but with less favorable results, by the same method except that the tiles were placed eighteen inches apart instead of one foot.

Another house forty by three hundred feet was treated by a lettuce grower with an average pressure of thirty pounds of steam passed through one-inch iron pipes furnished with a series of perforations six inches apart and three-sixteenths of an inch in diameter. The

iron pipes were made up into a frame and each pipe was seven inches distant from one another. The estimated cost for sterilizing one thousand cubic feet of soil based upon the treatment of the whole house was $8.33.

A lettuce grower who has a range of eight houses each being about three hundred feet long and thirty-six feet wide has recently treated them all by steam with the aid of a new forty-horse power boiler used exclusively for the purpose of sterilization. The sterilization apparatus consisted of a series of one and one-half inch iron pipes which were ten feet in length and were made up into a frame twenty feet long by about eight feet wide. The apparatus was placed on the surface of the soil and the earth from each side to the depth of one foot was shoveled on to it. The cost of this apparatus was about $20. Mr. C. W. Learned who devised it thinks that he could make a duplicate of it for about $17. In this instance it took three days to treat a house three hundred feet by thirty-six feet and from the estimated cost of labor, fuel etc., the treatment was made at a rate of $5.92 per one thousand cubic feet. The price paid for labor in this instance was one dollar and fifty cents a day.

The sterilizing machine used by Mr. Cartter is made out of two-inch galvanized twenty-ply iron tubing with one-fourth inch holes one inch apart each way. The headers are two or three feet long and are made of the same material and perforated. Galvanized iron nipples are soldered on the sides of the headers six inches apart. The ten-foot length pipes are made to fit over the nipples and also into one another so that any desired length or width of sterilizer can be obtained. This apparatus contains more perforations to the linear foot than any we have seen and for this reason and owing to the diameter of the tubing used it is most effectual as a heater. We observed one test with this sterilizer in which four hundred cubic feet of soil were heated at the rate of $2.00 per one thousand cubic feet. This includes the cost of labor at ten cents per hour, which was required to place the apparatus in position and cover it with soil ready for use, also the amount of fuel burned during treatment, together with the amount of coal it required to bring the same amount of water in the boiler to the same degree of temperature and the steam to the same pressure as before the treatment was started.

Mr. W. W. Rawson claims that it cost him $50 to sterilize a house three hundred by forty feet which would be at the rate of about $4.16 per one thousand cubic feet. This is undoubtedly a very fair estimate of what it costs to sterilize soil when undertaken on a large plan.

Mr. Sargent maintains that two men can sterilize a house one hundred and sixty by forty-five feet with his apparatus in three days. Assuming that it will take forty-two cents worth of coal to heat one thousand cubic feet of soil together with the labor required in setting up the apparatus it would cost about $1.66 to sterilize one thousand cubic feet. This is assuming that the boiler is already in operation for heating the houses and a fireman is employed to run it. It should be understood that there is no shoveling of the soil required with the use of this sterilizer, hence we should expect a saving of expense. When soil can be sterilized at $2.00 per one thousand cubic feet or even at $5.00 there is no longer any question concerning the practical application of this method in green houses for the extermination of some of its worst enemies which interfere with the production of healthy and profitable crops. Even where the cumbersome tile method is employed, the cost of sterilization is less than one-half what it costs to remove the old soil from a house and supply it with new.

Results of Sterilization.

It is not possible for us to give an adequate estimate in dollars and cents as to the amount of money that has been saved by the practice of sterilization, as we do not know the amount of loss experienced by floriculturists and market gardeners in this State due to infested soils. The value of any method of treatment will not be considered for one year alone but for a period of years in order to obtain an idea of its full significance. As a rule lettuce growers have suffered a loss of from fifteen to fifty per cent from the Drop alone and in some instances even greater losses have taken place. There are, however, other beneficial results derived from the practice of sterilization other than those of ridding the soil of disease producing germs. Some market gardeners have practiced sterilization for three years, not wholly for the sole purpose of ridding the soil of certain disease producing organisms, as that can be accomplished by one treatment when properly done,

but largely for the purpose of increasing their crops. We have made many experiments with various crops in which the growth of plants in sterilized soil was compared with the growth of the same species of plants in precisely similar earth not sterilized. The effect of sterilization is quite marked in such experiments.

Mr. W. W. Rawson, one of our largest lettuce growers, who has observed the effect of sterilization on his own crops for three or four years declares that he would rather have one inch of sterilized soil on his beds than any fertilizer which he has ever used.

For the purpose of determining on a larger scale than we had heretofore shown the effect heating the soil had upon the acceleration of a crop of lettuce we grew a crop from the seed to maturity in sterilized and unsterilized soil. The results showed a gain of thirty-three per cent in weight in favor of the sterilized plats. Plants grown in sterilized soil are always lighter colored, more tender and it is not a difficult task for an expert to pick out such plants in the market. Neither is it difficult to ascertain from market specimens what temperatures lettuce crops have generally been subject to. In houses where the soil has been treated twice the difference in the color of plants is very marked indeed showing that the prolonged heating of the soil is much more favorable to the growth of the plant than a brief period of heating.

There was two and two-tenths per cent more water in those plants grown in treated soil than in the untreated as well as a corresponding decrease in the unburned residue representing organic matter, ash constituents etc. From the color and texture of the lettuce grown in sterilized soil this might be expected.

A gain of thirty-three per cent in the growth of the crop is in itself worthy of consideration, so much so in fact that as already stated, many gardeners practice sterilization for the production of larger crops. This means that a crop of lettuce when four weeks old is equal to one six weeks old as ordinarily grown, at least such are the results which we have obtained in our experiments, and lettuce growers have related similar experiences. A great many tests have been made by us on various plants all of which show practically the same accelerating effect in growth and development as a result of sterilization. If one can turn out a crop as fully matured in four or four and a half weeks owing to sterilization as he can ordinarily in six and six and a half weeks without steriliza-

tion then it is evident that there is considerable saving in the method.

There are still opportunities for practical gardeners to improve the appliances for sterilization which will render the operation more efficient and reduce its cost.

Discussion.

W. W. Rawson said he had been very much interested in the lecture. He had consulted Professor Stone, who first brought the subject of sterilization to his notice, many times. He began to practice sterilization about four years ago; he began in a small way with a cartload of sterilized soil. He first spread an inch of sterilized soil on the surface of his beds; later two inches, and he now sterilizes all the soil used. He has sterilized the soil in thirty-four houses and fifteen hundred hotbeds. The subject is yet in its infancy. Sometimes after sterilizing the soil very fine crops will at first result, while the second and third crops will be poor, but this, Mr. Rawson contends, is due to poor management of the crops and not to sterilization. Mr. Rawson uses two-inch perforated pipe, thirty feet long. His men put them in while the steam is getting up. He can use each sterilizer two or three times a day. He considers the time and money well expended. If he had to spend $1,000 a year in sterilizing he would do it, but he thinks it will be necessary only once in three years. He considers sterilization one of the most important subjects in connection with his business. In his floral department he sterilizes all the soil used in pots. He has not compared his crops with those grown in unsterilized soil because he has none.

Professor Stone said that all the experiments he has seen show a wonderful penetrative power in the steam. The soil should be left undisturbed for a number of hours after sterilization and the heat will gradually work down. The greater the pressure of steam the more effective will be the sterilization. He would like a pressure of steam of at least fifty pounds to accomplish good results.

George D. Moore said he had two houses of lettuce, one sterilized and the other unsterilized. The lettuce in the unsterilized soil was the best; that in the sterilized soil grew more rapidly and did not head so well.

The lecturer said that Mr. Wolfe of Worcester sterilized his house of cucumbers and produced an average of one hundred and fifty-five number one cucumbers to a plant, but it was not all due to sterilization. He has a very fine strain of seed which he produced himself. The foliage has a great deal to do with getting good fruit. You cannot obtain good cucumbers without good foliage; ninety-five per cent of the plant food comes from the air by means of carbon assimilation taking place in the leaves. It is well known that when we heat soil the humus compounds or organic matter is more available. Heating the soil may drive out old gases. It is possible by judicious management to control the plants so that they will not grow too rapidly. Sterilization affects only those disease producing organisms which are in the soil such as Drop, Rhizoctonia, eel worms, and one of the damping off fungi, Pythium, but the common damping off fungus Botrytis which attacks geraniums, cannot be controlled by sterilization. Nematodes or eel worms are closely allied to the worms seen in vinegar and in paste. They do not live out doors in our climate at least through the winter. In the southern states they attack various economic trees and their control in that latitude is a difficult matter. They injure muskmelons much more than cucumbers. It is very difficult to control them there.

Joshua C. Stone asked why it is that one man will have diseases of every kind in his greenhouse, while his neighbor will run his for ten years without disease of any kind.

Professor Stone said that perhaps the man needed sterilizing. Some men can go into a greenhouse and see with an instinctive glance just what it needs. Diseases are communicated by exchange of plants. One grower in Springfield has never had certain diseases because he has never exchanged. We are going to have more of this trouble with plant diseases as soon as our commercial intercourse increases.

Varnum Frost said he thought many troubles might be attributed to continuing crops on the same soil year after year.

A vote of thanks was passed for the interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

FUNGOUS DISEASES OF FRUITS.

By PROF. M. B. WAITE, Dept. of Agriculture, Washington, D. C.

The diseases of fruits may be divided as to their cause into two great classes, parasitic and non-parasitic. The non-parasitic class includes diseases induced by bad soil, too high temperatures, too low temperatures, too constant temperatures, sour soil, bad drainage or excess of water, resulting in asphyxiation, alkalies, organic acids or other poisonous substances in the soil, poverty, drought, sun-scald, mechanical injuries, and all such causes. It further includes physiological disturbances within the plant itself, as well as the disease called chlorosis, by which the plant fails to take up iron although the soil is abundantly supplied, and diseases of nutrition caused by over feeding; also those of an enzymic nature, by which the plant loses control of its enzymes or vegetable ferments.

Turning now to the parasitic class, there are two main divisions, the animal and the vegetable parasites. Among the animal parasites are Nematodes or eel worms, Phytoptus and other mites, and the great family of insects. The sucking insects, gall producers and scale insects are intimately associated with the plant itself, and are typical disease producers. It is a question whether the work of the larger leaf-eating and feeding insects should be classed as disease, for it is only a step from this to the depredations of birds, mice, rabbits or even cattle.

The vegetable parasites of plants belong almost wholly to the great class of fungi, whose species, both parasitic and saprophytic, probably equal in number all other plants. The mistletoe, a flowering plant, is parasitic on the pear and the apple, producing a disease of these trees. Some algae, or even lichens, may be classed as disease producers, but practically all the vegetable parasites of fruits belong to the fungi or their very close allies, the bacteria. The number of the diseases of plants

produced by fungi is also very large. It is not rare at all for native plants to have as many as a hundred such diseases. The grape has fifty fungous diseases, and the apple in this country alone has thirty-five at least.

Disease, in its broadest sense, has been defined so as to include every possible unfavorable factor entering into plant life, and the origin of the word *dis-ease* lends some color to this definition. On this basis we should find very few healthy plants, and using this broad definition it would hardly be possible on theoretical grounds, to have a healthy plant. Professor Bailey has aptly stated that every plant has within it the potentiality of developing far beyond what is reached in ordinary cultivation. We know this is true, for as methods of growing plants are perfected, we see specimens under particularly favorable culture, reach still higher and higher development. The classification of diseases above given may seem to include an unnecessary variety of causes, but it is none too broad, for I am certain that within the past season in my orchard work I have seen repeated examples from every one of the causes mentioned. In fact, with a few exceptions, I have seen disease from all these causes in a single day's trip.

The ordinary conception, however, of disease in plant life is somewhat more restricted than above given. Disease may be defined as a condition of the plant by which it is rendered partially incapable of responding to its environment. By environment, is meant conditions of light, temperature, moisture, physical and chemical condition of the soil, in other words, the ordinary atmospheric and soil conditions. The gardener will say that a particular plant is not diseased; it has only met with an accident and will soon recover and grow thriftily again. On the other hand, this choice plant refuses to grow in spite of the most perfect cultivation, pruning, watering and adaptability of soil and climate. It therefore must be sick. This more restricted definition would exclude the ordinary direct effect of unfavorable environment, as well as injuries by feeding insects, birds and animals. It would include all physiological, enzymic and nutrition disturbances within the plant itself, as well as parasites which are intimately associated with the plant tissues, and is, I think, the definition more commonly in the mind of plant cultivators and orchardists.

The foundation for the study of the fungous diseases of plants was begun by the early mycologists more than a hundred years ago, and the work in systematic mycology during the past century has very greatly aided the study of modern pathology. Even the mere classification and naming of the species of fungi have been necessary for a complete understanding of the subject. This classification and nomenclature and the work of de Bary and his pupils on the life history and biology of the fungi have been the basis for modern pathological work. In fact, the biology of the fungi, taken in connection with the progress in the study of plant physiology, has made plant pathology possible. The mycologist studies fungi for themselves, though they may be parasitic and live on a host plant; yet he regards the fungus as the important thing and the host plant, from his standpoint, is useful only as a support to the fungi. The plant pathologist, however, turns his attention to the higher plant rather than to its parasites, and studies the parasites mainly in their relation to the host plant. Plant pathology is really quite a new science, in fact, scarcely more than twenty-five years old, and the knowledge of the treatment of plant diseases has grown up almost entirely within the past fifteen years. The results of investigations of plant diseases have been so satisfactory that the more these subjects have been studied, the greater has been the demand for still further research. The number of investigators is large and the amount of work now being done on this subject is very great and is rapidly increasing. It is a satisfaction to know that our own country leads the world in this line of investigation. Our universities, State experiment stations, and the United States Department of Agriculture, combined, are doing quite as much work as any other two countries, perhaps as much as all the rest of the world. The Department of Agriculture has just about doubled its corps of investigators of plant diseases within the past year. Not only have investigators been active, but the cultivators of plants, especially the fruit growers, the horticultural press and horticultural associations, have taken up the study of plant pathology energetically.

The word "fungicide," which was only coined in 1886, "Bordeaux mixture," "Monilia" and other technical names of fungi, are now common every-day words to the progressive fruit grower. It was an easy matter a few years ago for a mycologist to lecture to

an audience like this, for all his common knowledge was new to his hearers. In taking up the study of some of the more important orchard diseases, I will endeavor to give the principal facts concerning them, and especially their treatment, but fear, however, that much of the information which I can impart is already known to you.

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*Pear leaf blight, caused by the fungus *Entomosporium maculatum*, produces small round spots on the foliage and causes the leaves to drop early in the season. It also produces ugly hard spots on the fruit, frequently causing it to crack open. It is readily preventable by spraying with Bordeaux mixture, about three treatments being necessary on orchard trees. The first should be made as soon as the foliage is well out, about three weeks after the bloom sheds, and the other two at intervals of ten days to two weeks.

The quince spot and leaf blight of the quince is caused by the same fungus and is preventable by the same treatment. However, the first treatment should be slightly earlier in the case of the quince. Pear stocks and quince stocks in the nursery suffer severely from defoliation caused by this fungus. The treatment in this case should be more complete, the first spraying being made as soon as the earliest leaves are expanded, and about six treatments are necessary at intervals of ten days to two weeks.

Apple scab is one of the well-known pests of apple orchards, especially in the North. It is caused by the fungus *Fusicladium*. An allied species produces the pear scab, a similar disease of the pear. These diseases are also readily preventable by spraying with Bordeaux mixture. The treatment, however, should begin early in the season, as soon as the buds have burst from the cluster and exposed the individual flower buds. About three to five treatments are necessary.

The bitter rot of the apple is a very serious pest in Maryland, Virginia to Missouri and southward. While scab is particularly bad toward the North, bitter rot takes its place toward the South. The treatment for bitter rot should be about the same as for apple

* The portion of the lecture which follows was given from a large number of lantern slides thrown on the screen. As the pictures cannot be reproduced, only an abstract is given.

scab, but the results of spraying have not always been satisfactory. In the mountains of Virginia, both bitter rot and apple scab occur, the latter attacking the Winesaps, while the former attacks the York Imperial and Newtown pippin.

Canker is the term applied to several diseases which attack the bark of apple, pear and other fruit trees. This type of disease can usually be prevented by spraying with Bordeaux mixture. Where it has already appeared on the trees, it should be cut out as much as possible, the wounds, where large, coated with paint or liquid grafting wax, and then the trees thoroughly sprayed in early spring until they are blue with rather thick Bordeaux mixture.

The fly-speck and smut fungi, which cause such a bad appearance of the apples in the Tidewater region of the Atlantic Coast, especially in the Middle States, are very easily preventable by treating with Bordeaux mixture. The treatment outlined for apple scab and bitter rot is very efficacious.

The black rot of the grape still maintains its position as the most serious pest of this fruit over a large portion of the country. The destruction wrought by it in the Niagara vineyards of North Carolina this last season was almost complete, and the Delawares were seriously injured in spite of more or less spraying. No diseases, however, have been more thoroughly demonstrated to be susceptible to treatment than the black rot and mildew of the grape, although we regret to say that the annual losses from these diseases still continue to be large. The first treatment should be made with Bordeaux mixture just as the buds are swelling. The second treatment may be made when the grapes are in bud, a third just after the fruit has set, and the fourth and fifth at intervals of ten days to two weeks. If spraying is deemed necessary after the fruit is from two-thirds to three-fourths grown, the ammoniacal solution of copper carbonate should be used instead of the Bordeaux mixture to avoid discoloration of the ripe fruit.

Pear blight is one of the most destructive pests of pomaceous fruits. It is caused by the microbe *Bacillus amylovorus*, one of the bacteria. This germ works in the blossoms, young fruits and fleshy bark, killing these tender succulent tissues and resulting frequently in the death of the entire tree. The disease enters the tree normally through the nectary of the blossom, and is carried from flower to flower and from tree to tree by bees and other insects

which are visiting the flowers for their nectar. It also enters the tree through the tender tips of young shoots, but even here insect punctures and insect distribution is probably necessary. The tree resists the inroads of the blight quite strongly, and in a majority of cases successfully, the resistance depending on a number of different factors. In the majority of cases of infection of pear blight, the blight dies out completely during summer time. In a few cases, however, the disease gets into the fleshy bark of the limbs or body and remains alive over winter. These cases, which I call hold-over blight, start the infection on the blossoms the next spring. The remedy for pear blight consists especially in cutting out the hold-over blight in the fall of the year. The work should be done very thoroughly and carefully, cutting from six inches to a foot below the lowest discoloration. The trees should then be examined very carefully the next spring just before the blossoms open to be sure that no cases have escaped attention. Cutting out during spring or summer when the foliage is on is beneficial always, but may not necessarily be effective in eradicating the pest. About two to three weeks after the blooms have shed, is an important time to inspect the pear orchard for blossom blight, and the prompt removal of a few cases at this time may be very beneficial. In cutting out blight always carry a sponge or piece of cloth and a solution of corrosive sublimate one part to two thousand. Wash over each wound with this solution and wash the knife or saw frequently with it.

Peach yellows is one of the most serious diseases of the peach and has utterly eluded all efforts by scientific men to find out its cause. There are many things, however, known about the yellows which are important to the orchardist. The disease is a communicable one, spreading rapidly from tree to tree and from orchard to orchard. The method of communication is not known, but it may be artificially communicated by budding from diseased trees. As no such process normally takes place in the orchard, there must be some other way by which the disease is transmitted. The disease behaves like a contagious parasitic malady, but no germ or microbe has ever been found. Strange to say, the disease can be prevented as thoroughly and satisfactorily as any known plant disease, although the common opinion of horticulturists is to the contrary. By promptly removing trees at the very first ap-

pearance of symptoms of the disease, it is possible to keep it entirely in control in an orchard or in a region. The first symptom of the yellows consists of the spotting and premature ripening of the fruits. These premature peaches are very striking in appearance and very easily detected, and should always be considered a cause for the prompt removal of the tree. Later the tree assumes a yellow cast of foliage and bushy, wiry, yellow sprouts are produced, and, if the tree is not dug up, it dies after three to five years. There is a great demand in the localities where this disease is prevalent for some one to find out the cause of the yellows, and yet it is very doubtful if any better treatment could be found than the eradication method now very well known. The difficulty with this, however, is to get people to put it into execution.

The rosette is a very similar disease to the yellows but is restricted to the South so far as is known, it being limited mainly to the State of Georgia. This disease is very much quicker in its action than the yellows. The first symptoms appear in the spring, and frequently the trees are dead by August and never survive the year.

The little peach disease is a comparatively local disease in Michigan and New York State, but is very severe in a few localities. The main symptoms of little peach are the reduced size of the fruit, the belating of the fruit, the yellow color of the foliage without apparent cause, the diminution of twig growth, and finally the gradual death of the tree, limb by limb. Careful investigation of this disease has shown it to be distinct from the yellows and rosette. It is thought to be due to a root parasite, a minute fungus growing on the feeding roots.

The Monilia fungus, causing the rot of peaches, plums and other fruits, is one of the worst pests of the stone fruits. This fungus is greatly favored by wet weather and does an enormous amount of damage in the Atlantic Coast States from New England to Florida. The past season it was particularly destructive from Maryland southward to Georgia. By far the larger part of the early peach crop of Georgia was destroyed by it, and in some orchards in Virginia the entire crop was taken, both early and late. It largely disappears when long periods of drought occur at the ripening time. Persistent efforts have been made by a large number of investiga-

tors for the past five or six years to treat this disease by spraying. Various fungicides have been employed, and different times and numbers of treatments have been used. The results, we regret to say, have not been satisfactory. There seems to be but little trouble in preventing the Monilia, at least greatly reducing it in an average season, although in a very wet season this part of the program cannot always be fully carried out. The main difficulty comes from the injury to the peach trees by spraying. Bordeaux mixture sprayed on apples, pears, quinces, and also on potatoes and many other plants has a distinctly beneficial effect on the plant aside from its fungicidal value. It increases the amount of chlorophyll, making the leaves darker green, and enables them to stand more drought and heat. They persist longer on the plant and do more work. In case of the potato at least, they assimilate more starch. There are probably minute amounts of copper salts absorbed into the leaves, producing this beneficial or tonic effect. On the other hand, the peach and the Japanese plum, as well as the violet, bean and some other plants, are injured by the copper spray. These plants probably absorb a large amount of the dissolved copper salts in their foliage. At any rate, their tissues either contain some substance on which the copper acts injuriously or are so constructed as not to withstand its toxic effects. The injuries to the peach by Bordeaux spraying are of two main types: first, the shot-hole and corrosive effect on the young leaves; second, the defoliating effect. The shot-hole and corrosive effect is first noticed and occurs shortly after spraying but does not increase to any extent after the spraying has ceased. The defoliating effect may not begin until two or three weeks after spraying and then gradually increases until the entire trees are bare, resulting in poorly colored, insipid fruit or, in some cases, in its being dropped from the tree. There will be many experiments tried on this disease during the coming season, including some by the Department of Agriculture, in the hope of getting a treatment that will not only kill the fungus but will not injure the foliage.

As far as we know at present, Bordeaux mixture can only be applied to the peach with safety before the leaves are out in the spring. After the foliage is out this spray should be used with caution. If peach foliage is sprayed at all with Bordeaux mixture,

instead of the standard formula of six pounds of blue-stone to four pounds of lime, a dilute formula should be used containing an excess of lime, namely, three pounds of blue-stone and nine pounds of lime to fifty gallons of water. Copper acetate and the ammoniacal solution of copper carbonate have both proved very severe defoliators in my experiments. We shall try several other fungicides this year, including sulphur compounds, in the hope that one can be secured which will prevent the Monilia without injuring the foliage.

The peach-leaf curl is one of the few fungous diseases of the peach that is easily preventable by spraying, for the reason that the spraying in this case is done just as the buds are swelling. Ordinary standard Bordeaux mixture should be used for the purpose.

Strawberry leaf blight is a very troublesome disease with many growers, although efforts to prevent it have been very successful by the selection of resistant varieties, thorough cultivation and renewal of the beds. However, it can be prevented by spraying, if it is so desired.

For direct spraying on the plants there is no fungicide at all comparable to Bordeaux mixture in the great majority of cases. For certain purposes, as for instance, the later sprayings of grapes and other fruits, the ammoniacal solution of copper carbonate can be substituted for it, but it never quite equals the Bordeaux in efficiency. For some fungi, notably the surface mildews, a solution of potassium sulphide, or liver of sulphur, seems to be more efficacious. Bordeaux mixture represents the highest type of a fungicide, not so much from its killing power on the fungi as for its harmlessness to the host plant. It is not equal as a disinfectant or germicide to copper sulphate or any of the soluble copper salts, to chloride of lime, formaline, corrosive sublimate, or such poisons. There is a great deal of very bad Bordeaux used in spraying, and it is possible to mix the blue-stone and lime in such a manner as to make vast differences in the mixture. The correct Bordeaux mixture should be sky-blue in color, of a very fine grain, and should settle very slowly. The copper must be completely neutralized by the lime. To make good Bordeaux, it is usually best to prepare stock solutions of both the lime and the copper sulphate, containing one pound to a gallon of water in each case. To make, for instance, fifty gallons of Bordeaux, dilute the

lime with twenty-five gallons of water and the blue-stone with an equal amount, and pour these quickly into a third vessel, stirring rapidly. The quality of the lime is very important. A good grade of stone lime should be used which will slack up evenly into a fine paste, and will dilute into a smooth, creamy mixture. For the purpose of more readily mixing the lime and blue-stone solutions, I have devised several arrangements by which the two can be diluted in barrels or tubs and then run by gravity through a rubber hose into the receptacle. Standard Bordeaux mixture should contain six pounds of blue-stone and four pounds of lime to fifty gallons of water, and is known as the 6-4-50 formula. Strong Bordeaux may be made with half the amount of water for spraying in winter time on dormant trees. For spraying peach foliage, dilute Bordeaux containing three pounds of blue-stone, nine pounds of lime and fifty gallons of water is to be preferred. This will be known as the 3-9-50 formula.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE INFLUENCE OF AMERICAN EXPOSITIONS ON THE OUT-DOOR ARTS.

By WARREN H. MANNING, Boston.

Ostensibly World's Fairs are promoted to enable all countries and states to display to many people their natural advantages and resources in such a manner that colonists and capitalists will be induced to develop them, to enable manufacturers and other producers to extend trade by showing their products, to display works of art and the results of sociological, philanthropic, and religious efforts, and to bring together in conference the representatives of all such activities for an exchange of ideas and mutual acquaintance. Really World's Fairs are promoted to "boom" a city and to induce our national and other governments to put money into the coffers of local merchants. Local sub-

scriptions are invariably solicited on the ground that the fair will draw a certain number of visitors, each one of whom will leave a specified sum of money of which each local contributor must surely gain some part. Each exposition is followed by a local contention as to whether the city was or was not benefited, on the whole, by the undertaking. Presumably the division of opinion lies between those who did and those who did not receive what they regarded as a fair share of the governmental and individual contributions to the city's welfare, with a sprinkling on the one side of those of the real workers to whom the honors they received were not enough to offset their labors, and on the other side of those whose vanities were pleasantly tickled. In any event it is safe to say that no city once having gone through the throes of a World's Fair will attempt another in this generation, even if it were possible to again induce a paternal government to lay a few million dollar eggs in the exposition nest.

It is of course difficult to trace the direct results of an exposition. A city probably receives directly from the exposition more money than it actually expends, but indirectly the loss is probably much greater than the gain. Many of the "boomers" of the fair have little to lose and much to gain. The substantial and far-seeing citizens are compelled to contribute time and money from a feeling of loyalty to their city. They know that without such contributions the fair would be a failure. Many of them know, too, that the same amount of money and energy expended upon the improvement of the city, the improvement of the condition of the people and the development of its industries and resources would result in an infinitely greater permanent gain. They know that much local capital will, in view of the fair, be tied up in undertakings from which no return can be hoped for a long time after the fair closes, and, furthermore, that the exposition will lead capitalists to invest money in other localities that otherwise would be invested at home.

This, of course, is the selfish point of view, but it is, we believe, the point of view that will result in defeating, after the St. Louis Exposition, any further attempts at a great World's Fair for a long time, unless it may be at the national Capital, directly under the auspices of the United States government with periods of special interest and special transportation facilities

and rates to draw citizens from all parts of our own and foreign countries. At Washington there is and always will be the best representation of the country's resources arranged in the most instructive manner. It is likely that there will continue to be local expositions in which local resources will be effectively displayed. If they could be in a sense outposts of a great permanent exposition at Washington which could establish traveling exhibits for their benefit, they would be of far more permanent value than the theatrical outbursts of local pride represented by the quarter century exposition period that is passing by. However much or little cities may be advancing their own interests by holding expositions, I think there can be no question as to their value in promoting the welfare of the nation as a whole as long as they are given a distinct educational value and can draw large numbers of visitors to profit by the lessons they teach. If it were not so there would be no justification of national appropriations.

It is of course difficult to trace or measure with definiteness the results of a World's Fair. Every one of the millions of visitors to our great expositions must, however, have been quickened intellectually by what they saw and morally, too, if they kept away from the midways. Surely the Court of Honor at the Chicago Exposition was a dream of beauty that could not fail to lift all thoughts and aspirations to a higher plane. Many people needed such an incentive to draw them from their homes and give them the broader outlook that travel alone can impart.

The bringing together of widely separated men and women representing all the activities of a nation, or of the world, in organized conferences or even in accidental meetings will do more to promote these activities than will a large amount of correspondence and reading. An enthusiastic individual can by his presence and personal appeal make for his cause life-long workers of individuals who could only be mildly interested by written appeals.

A state's exhibit of its resources may induce a single individual to establish industries that will yield a return many times in excess of the cost of the exhibit. The same result may grow out of a manufacturer's exhibit, or from a new idea gained by a mechanic. Surely the influence of a comprehensive fine art exhibit upon all people, and especially upon the thousands who

have never seen real objects of art will alone justify large expenditure of time and money.

One of the most important results of the exposition as far as they relate to the material and æsthetic welfare of our nation as a whole is the advancement of the outdoor arts as represented by landscape design, architecture, sculpture, the closely allied industries of floriculture, horticulture etc., and the closer personal and professional relations that have grown out of the design and execution of the plans for these world's fairs.

Well organized, united action of this character began at the World's Columbian Exposition, at Chicago in 1893. We must not overlook, however, the Centennial at Philadelphia in 1876 and its very marked influence upon the outdoor arts. Here the design of buildings and grounds was governed very largely by the engineer. The architectural profession did not then have the influence which it has now and landscape design was represented by only a few able men whose public work had been confined almost wholly to public parks, the design of which had not at that time developed sufficiently in beauty for people to realize that the profession would eventually stand at the head of the arts of design.

The so-called Queen Anne style of architecture, the general use of hardy rhododendrons, and the introduction of bedding-out designs in tender plants were direct outgrowths of this exposition. The introduction of rhododendrons was of real permanent value. The use of bedding-out plants developed into a craze almost as bad as the tulip mania of the Dutch, and its more ardent devotees devised such astonishingly curious and ludicrous conceits that discredit was cast upon such a use of plants. This, coupled with the excessive cost and the comparatively short period of perfection, is resulting in the gradual abandonment of the bad as well as the good features of bedding-out. The less said about the Queen Anne house, the better; it was a bad case of architectural jim-jams from which the ready-made plan architects have not yet recovered. The good architect of today simply gasps and says nothing when this period is mentioned in his hearing.

The Chicago World's Fair grew out of a sympathetic, harmonious and united effort on the part of the ablest men of the outdoor art professions to secure perfectly proportioned groups of buildings with suitable landscape environment and perfection

in detail. No other exposition in this generation has come or will come as close to the highest ideal as this, because so many men of equal ability cannot be induced to give their time and best thoughts so unreservedly to such a problem again.

The influence of the Chicago Exposition upon the men engaged in the outdoor arts was positive and direct. That it was a profound inspiration to architects to do better work was made evident almost immediately in a better class of business, residential and public buildings. It gave as nothing else had done, to professional men and the people at large a clear conception of the profession of landscape architecture as a fine art, for it was generally known that the site was adopted on Mr. Fredk. Law Olmsted's advice, that he outlined the general plan in his report, and was one of the conferees that placed the first draft of the plan upon paper, and that all landscape work was under his direction. The sculptors and mural decorators also opened a broader field of usefulness by their work at Chicago. Since this fair the men and women of the allied fine art professions have been coming closer and closer together in their relations. They are seeking to coöprate with each other more frequently in public and private work. A natural outgrowth of this coöperation is the serious and practical consideration of comprehensive schemes for the promotion of civic beauty that will after a time make America the most beautiful country in the world.

Every important exposition that has followed the World's Fair copied the essential features of its plan. The California midwinter exposition immediately following was not an artistic success taken as a whole and it did serious injury to and left undesirable mementos in a beautiful park. The Omaha Exposition was an artistic success so far as buildings were concerned, but it followed the lines of the Chicago Fair too closely and suffered by comparison. The Atlanta and Nashville Expositions were lacking in the beauty and unity that gave the Chicago and Omaha Exhibitions distinction. Their average of excellence was high enough, however, to have an influence for good upon the whole South, as will be true undoubtedly of the Charleston Exposition. The work at Buffalo was taken up in the same spirit as it was at Chicago by a different group of men. No one can deny the brilliancy and beauty of many portions of the exposition. There

was not, however, that careful and successful adjustment of proportions that was the hall-mark of great minds acting harmoniously at Chicago. It was, to use a recent expression, designating the work of the architect, the "frozen music" of a remarkably successful vaudeville entertainment, not that of a grand opera. The color scheme, a most difficult problem, was well handled. So also was much of the planting in interior courts and about the bases of important buildings. The use of the upright forms of red cedar and poplar growing out of masses of shrubs at salient angles of buildings was especially appropriate. The use of vines in window and roof boxes also added much to the gaiety and grace of certain architectural features. Away from the buildings the spotty beds in lawns gave the grounds the appearance of having a bad attack of an unpopular malady that since the exposition has come to be wide-spread. The Pan-American Exposition was not alone in this respect. The general effect of the grounds about the buildings of nearly every exposition has been disfigured by beds of really fine material that did not come into harmonious relation with the buildings, or the plan of the grounds, but were mere spots set apart by themselves.

It is too early to determine the influence that the Pan-American Exposition will have upon the outdoor arts. Following the precedent established by the two other great expositions, we should expect an eruption of excessively ornamented and highly colored structures perhaps quite as bad in their way as the poor Queen Anne's nightmares, because few men can hope to design successfully such buildings as were represented at the Pan-American where the whole situation was controlled very largely by the only men who have been eminently successful along these lines. Probably the sober sense of American architects will discourage this movement, especially in the colder sections of the country where this style of architecture would be quite out of place.

A reference has already been made to the spotty planting of considerable sections of almost all World's Fairs' grounds. Primarily, it is due to a defect in the general plan of the expositions whereby no adequate provision was made for such outdoor exhibits. The out-of-the-way back corners of no use for other purposes were assigned to such exhibits. Usually the soil

and situation were bad, and this, coupled with the shortness of time available, made a successful exhibit of hardy plants an impossibility. Exhibitors could make this injustice so evident that exposition authorities were compelled to grant locations in the open spaces designed solely to give the buildings an harmonious setting. The only really successful exhibits possible were of particularly vigorous plants that would grow well or continue to look well the first year, such as Cannas and Rhododendrons.

Horticultural interests have never been adequately represented at any of our World's Fairs, and even if favorable conditions had been provided the time was too short to prepare and establish exhibits in a satisfactory manner.

The Massachusetts Horticultural Society is large enough, strong enough, and able enough to take a commanding position with reference to all matters that pertain to the interests it represents along the lines of outdoor art work. Now, societies like individuals have periods of repose and during these periods of repose they sometimes have pleasant dreams in which some little incident is so startling and shocking that they wake with a shudder and a scream and for a few hours are so unstrung that they will quarrel with their best friends; but a day's activity dispels all this and in another day the whole incident is forgotten. The Massachusetts Horticultural Society needs a day of activity; it needs to study the movements of the day, the influences growing out of such expositions as have been referred to, and the work of other societies having objects similar to its own — then to study its own work to see if it is gaining or losing power and influence. If it is losing, then the control of its wealth is likely to come into the hands of a few able, shrewd, selfish men who will establish a mutual admiration society with occasional banquets and just enough work to keep other members quiet. If it is gaining it will take up new and living issues that will interest every member and make active workers of a majority and benefit the public at large. It will bring its work before the members in fresh, timely publications issued at frequent intervals; it will encourage such new lines of work as have recently been laid down by the School Gardens and Children's Herbariums Committee; it will discourage the ancient and commonplace in its exhibits by actively encouraging new exhibits and new

exhibitors; it will encourage more original investigation and less exploitation of old things; it will reach out both hands in good fellowship to other local societies having closely allied objects in view, coöperate with and aid them in their work and at the same time add to the interest of its own exhibits as it has done through its connection with the Boston Mycological Club. It will not compete, even remotely, with the legitimate work of other societies, as it is doing in its exhibits of wild flowers, or duplicate work that comes directly within the field of, and is being done by, another society, as it is in its Forestry Committee.

It will continue to coöperate with other societies in the care, acquirement, and safe-guarding of public reservations, or in the preservation of notable landscape objects as it has with the Forestry Association in connection with the Greylock Reservation. It will continue to extend a welcoming hand to visiting national associations having allied interests as it has to the American Park and Outdoor Art Association.

In closing let me express an opinion that active aggressive work and cordial sympathetic coöperation with others will place the society on a still higher plane than it has been in the past, and bring correspondingly greater results; also that an aggressive and good-tempered discussion of all the problems coming before the society will do it good, and I hope most sincerely that what I have said may help to bring this about.

Discussion.

Benjamin P. Ware said that he should like to inquire whether the lecturer felt that the desire for World's Fairs was at an end, and asked if there were not other ways by which people could acquire love of beautiful homes and home surroundings than through the lessons taught by a great exposition.

Mr. Manning replied that though the public get great good from the expositions, such fairs have proved to be unsuccessful financially, and it is doubtful whether, after the St. Louis fair, any other great city can be induced to undertake another one. A horticultural Society like this could, as regards outdoor arts, exert much the same influence. We could have here an exhibit which would be national in character.

Michael Sullivan thought that at Chicago the horticultural

feature was the most prominent part of the exposition. He said that Boston had the foundation for one of the finest World's Fairs and suggested that a marine and inland exhibit might surpass all former fairs.

President Hadwen asked if the lecturer could give a few points on matters that are essential to the adornment of rural homes at a small expense.

Mr. Manning answered that one thing of importance was that the lawn space should be taken advantage of; that it should not be broken up by scattered shrubs but framed in rather by a wall of shrubbery. Floral displays should be in flower gardens into which one could step from the house, rather than numerous small beds. Masses of flowers, too, are more effective than dozens of different varieties in smaller quantities. The main object is to make an attractive scene in which no one feature is too conspicuous. The house itself should be connected with the surrounding grounds by planting around the foundations. Uninteresting features should be shut out by shrubbery. There should be a preservation of natural existing conditions, though these are sometimes looked upon by the owners as undesirable. Trees and shrubs already on the land may be better suited to the surroundings than anything else could be, and are often better left standing than removed. Irregularity of surface is often an element of beauty not found in smooth lawns. In planning home grounds one should be largely governed by existing conditions.

In making plans for the house the question of the view should be taken into account and the rooms most used should have the best outlook.

William C. Strong thought our Society had had as great an influence on the public tastes and opinions as a world's fair would give and emphasized especially the strong though quiet influence on the community, through so many years, of our Saturday exhibitions and of the work of the Committee on School Gardens and Children's Herbariums.

On motion of Edwin A. Hall a vote of thanks to the lecturer was unanimously passed.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE EVOLUTION OF VEGETABLE CULTURE DURING THE LAST FORTY YEARS.

By WARREN W. RAWSON, Arlington, Mass.

By evolution we mean progressive development, and I doubt if there be any other branch of business in which this progression is more pronounced than in the culture of the various vegetable crops which have been grown for market for the past forty years. This advancement has been made in many ways, namely, the introduction of new varieties, the improvement of old varieties, the greater intelligence in the use of fertilizers to enrich the soil and thus increase the production, the improvement of farm machinery and the methods of cultivation, and the introduction of glass houses for the forcing of crops during the winter months.

Forty years ago the cultivator of the soil had to depend largely on his own exertions and experiments to attain success, but how different today! Agricultural Colleges exist in every State, whose object is to instruct him in the culture of all crops; the amount of literature pertaining to agriculture has increased enormously; and active horticultural and agricultural societies have been formed in nearly every community for the exchange of ideas, thus enabling him to benefit from his neighbor's experience and vice versa. But with all these advantages of today there must be coupled, to ensure success, the same energy and application to work that then existed.

We have learned that it is possible to produce three crops where only one could be obtained heretofore. This has been brought about by more thorough cultivation and the application of such fertilizers as will bring the soil up to the required standard.

Great strides have been taken in agricultural chemistry during the last forty years. Now we can tell by analysis the exact

amount of the essential elements, namely, nitrogen, potash and phosphoric acid in the soil, and if one or two are deficient for the successful production of the crop they can be supplied. There are special fertilizers prepared composed of a greater or less proportion of the above named elements according as the various crops require, as lettuce fertilizers, cabbage fertilizers, etc.

Stable manure was the fertilizer used then and sold for four to five dollars a cord, but now it can be bought at the stables for one dollar a cord, the reduction in price being caused by the greater use of commercial fertilizers instead of the manure. However, many of the successful market gardeners of today stick to the old way, feeling that it is the surest and best, and use large quantities per acre, perhaps three times the amount used forty years ago. That does not imply that three times the crop is produced, for it is evident that more dressing would be required to produce a crop on old land that had been used for that length of time than it did then. Nevertheless, it is a fact that some of our best and quickest crops are produced on this same land that has been used year after year.

The improvement in machinery has been so great that one man and one horse can do the work that required many, forty years ago; thus the expense of production is greatly diminished.

The climate has so changed during the past four decades that crops which were very successful then out of doors are almost a failure now. Cucumbers and melons may be cited as examples. Then we had spring, summer, autumn and winter, but today the seasons are more or less mixed up and often in the summer season we have weather that will not permit the two crops mentioned to live out of doors and they are therefore grown under glass.

Glass had just begun to be used forty years ago and I remember one man who had five hundred sash and everybody thought it was an enormous amount, but today they are few who have as small a number. After the sash came the glass houses, and these have been enlarged and perfected to such an extent that today the growing of vegetables under glass has become a specialty and crops have attained a perfection unknown forty years ago. Acres are covered with these glass houses heated with steam or hot water and the cultivation of the same has developed into the most important part of market garden business.

Four crops can be produced in a year, three of lettuce and one of cucumbers. It would be difficult to estimated exactly the cost of production of each cucumber or of each head of lettuce in a house but we can safely say that it is at least one-half that of forty years ago. They do not sell for as much in the market as the supply is greater in proportion to the demand, but more can be sold at a moderate price and a fair profit obtained from the whole crop.

Much of the land cultivated forty years ago is too expensive today to grow crops on and the growers are moving away to a greater distance from market where land is cheaper and taxes less.

It is the same in the market garden business as in many others, in that goods are produced in greater quantity at a less cost of production and sold at a smaller percentage of profit than forty years ago. What some of the market gardeners of today spend for luxuries would have been considered a good profit then. The general mode of living has changed greatly. Now the market gardener has his pair and fine carriage while forty years ago he went to church with one of the farm horses. Now he has two or three weeks vacation in the summer; then he toiled the whole year round. His boys had to work when not at school and now they do as they please. In fact the market gardener of today is classed as an up-to-date business man. He works more with his head than with his hands. He plans the work for others, keeps informed every day of the condition of the market, as to its prices and the supply and demand, knows all about the new seeds and machinery introduced, and in every way endeavors to get the greatest amount possible out of his land.

One of the most vital phases of this evolution of market gardening is the improvement of old and introduction of new varieties of vegetable seeds. Forty years ago most of the market gardeners grew their own seeds or exchanged with their neighbors, that is, one man would grow one kind and exchange his surplus with one of his neighbors who had a surplus of some other variety. There were only two or three seed stores in Boston at that time but today there are three times as many and many of the market gardeners buy large amounts of seed of New York and Philadelphia houses.

The seed business of today is one of enormous detail and is

brought down to a system that was not dreamed of forty years ago. The seedsman knows what is the very best locality for every crop and sends his stock seed to a grower in that locality whom he knows makes a specialty of that particular variety. For instance, we get our peas and beans from different sections in Northern New York and Canada, our vine seeds from Michigan and several states in the West, our onion seed from California and Connecticut, and our radish and spinach from Germany, where we also get the greater proportion of our flower seeds. By this system better seeds are produced at less prices and the seller, knowing the origin of the stock, can tell what the crop ought to produce under ordinary conditions.

All fertilizers are now required by law to have a correct table of analysis on every package or bag, that is, the different percentages of each element that they contain, so that the buyer can tell just what he is buying. Only by practical experience can he tell what kind and how much of that kind his land needs for the very best results. Only he who has given it the closest study realizes how true it is that different crops require different treatment and different fertilizers for different tracts of land.

Then there are new insects coming up every few years and creating havoc among the market garden crops, and to learn how to successfully cope with these is another chance for study which was unknown forty years ago. If the market gardeners had known as much then about the numerous things I have mentioned as they do now, many of them would be millionaires.

Probably the most interesting phase of the evolution of market gardening during the last forty years is the study of the changes and improvements made in the different kinds and varieties of vegetables. I can remember many of them myself, but having access to some old Boston seed catalogues of that date, I am able to trace them more clearly. I will take them in alphabetical order and speak of some of the principal ones.

Asparagus.—This crop is much the same as it was then but cultivation has improved it very much. Probably Mr. John B. Moore of Concord did as much for the improvement of the asparagus as any grower and we are now growing and selling Moore's Cross Bred in preference to many other varieties. The town of Concord

is today the principal locality where this very fine vegetable is grown. It can be forced to some extent.

Beans.—More changes have taken place in the bean than in any other vegetable. This is especially true of the dwarf or bush variety. Forty years ago we did not know the wax variety which is the most popular type today. This was introduced about thirty years ago. The Golden Eye Wax is about sixteen years old and was brought out by one of our Boston seedsmen and sold to other seedsmen for stock at ten dollars per peck. Undoubtedly the most popular wax bean today is the Kidney Wax which is catalogued under various names. It is a very tender variety but quite difficult to grow on account of its tendency to spot or rust. This is especially true in a wet season when it is almost impossible to prevent the rust but in a dry season very little will appear.

The Mohawk, Six Weeks, Valentine, Red Cranberry and Dwarf Horticultural are about the same as forty years ago. There are today quite a number of varieties of the Horticultural which sell under various names, one of the most prominent being the Goddard or Boston Favorite. Next to the Kidney Wax the Horticultural Wax and Valentine Wax are the most popular of the wax varieties. The Brockton Pole, introduced in 1884, as well as the Worcester Pole, of more recent introduction, are great favorites as pole varieties. There are a number of varieties of Lima Beans both pole and bush, the old Sieva Lima being the forerunner of this type.

Beets.—I can well remember the introduction of the Dewing's Beet by its originator, Mr. Dewing. The seed was in great demand at that time, which was about thirty years ago. We have had many improvements since then, the most popular ones being the Favorite, Edmands, Detroit Dark Red and the Crosby Egyptian. The last mentioned is the best early and forcing variety and was introduced by Mr. Josiah Crosby about twenty years ago and has held the reputation of being the best early beet ever since. The seed used to sell for two dollars and a half per pound but today the genuine article costs one dollar per pound.

For second early varieties the Favorite and Edmands are selected and the same for late. They are both distinctly blood beets of good shape and not very large. The long beets that we used to see in the markets are seldom seen now. The seed is sown how-

ever for beet greens as it produces a dark red leaf and is very prolific.

Cabbage.—As to the cabbage there are quite a number of the varieties which were popular forty years ago that are still in demand today, such as Early York, Wakefield, Winnigstadt, Drumhead, Flat Dutch and Savoy. These of course have been greatly improved by culture but they still posses the same characteristics they had then. The most prominent of the newer varieties are the Early Spring, Early Summer, Stone Mason, Drumhead Savoy, All Seasons and Danish Ball Head.

Only the green worm and maggot affect the cabbage but when grown in large quantities the worm does not bother the crop much, and if grown on new land the maggot can be avoided.

I think there is no crop that I have mentioned or shall mention where there has been a greater change in market price than in the cabbage. We used to get ten to fifteen dollars per hundred while today five to six dollars is the top price. There is some profit in them at this price for we grow many more of them and can grow them cheaper but not for one half what we did forty years ago.

Celery.—This crop has grown as much in popularity as any on the list. The varieties have changed greatly, in fact not one of the varieties that were popular then are in use today. There is also a vast difference in the cultivation. We used to grow a branching celery but now the market demands a solid heart. Then the rows were six feet apart and one foot apart in the row, but now three feet apart and six inches in the row are the proper distances. So that now we have to use four times as many roots as formerly but we do not get as much return for every acre of land.

The introduction of the Paris Golden variety made a great revolution in the celery market but not for the benefit of the producer. This is a self blanching variety, grows very readily on new land and is popular for the early market. But when the Giant Pascal and Boston Market varieties appear on the market the Paris Golden sells at a discount. I sincerely believe that if we had never seen the Paris Golden celery we would be better off, for the other would bring enough more to make up the difference.

The celery crop is one that requires a large amount of labor and is not in many cases a very profitable crop but it serves the purpose of keeping the men at work during the fall and winter and to

occupy the land as a second or third crop and thus help to make business if not profit.

There is not much difference in the cultivation of the late varieties. They are bleached by banking the earth up around the plants. The first banking is accomplished by the help of the celery plow, but the second banking has to be put up with shovels. A greater part of this late celery is put into pits and kept for winter use. When kept till spring it will bring a high price, but as it takes a greater number to make a dozen in late winter or spring there is more profit in selling it in the fall at one dollar per dozen than in spring at two dollars.

Corn.—Great improvements have been made in the varieties of sweet or sugar corn and much larger quantities are raised as compared with the early sixties. Adams' Early and Evergreen were the two principal varieties then. Now we have Early Crosby, Early Cory, Marblehead, Moore's Concord, Potter's Excelsior, Black Mexican, Mammoth Sugar and Stowell's Evergreen. All of these are fine in quality and are grown in different sections in different seasons and are in the market from July 1st till frost comes. As to the cultivation of the sweet corn we employ practically the same methods as were in vogue forty years ago.

Cucumber.—This is one of the best known vine crops and was grown almost wholly out of doors forty years ago and very little under glass while now it is just the opposite. This has been brought about by the change in the climate which renders the outdoor crop very unprofitable as a rule. The cucumber is now grown all the year round in houses made for the purpose and it is generally considered to be one of the most valuable crops for the market gardener.

We have many of the same varieties now that were known then but they have all been greatly improved. The Improved White Spine is the most generally grown and is the best variety for market. The cucumbers are started in a house after a crop of lettuce has been taken out. The vines are trained upon trellises made of slats and wire so that the fruit will hang down and thus be very easily picked. The bees are put into the house when the blossoms appear and in two weeks from that time the first fruit will be picked, that is, in the spring or summer months when the

temperature will run as high as 100° in the day time and 70° at night.

Forty years ago we used to get as high as fifty cents apiece for cucumbers but not a very large quantity could be sold. Today large amounts are sold for ten to twenty cents each, but the time when they pay the best and when we get the most out of the crop is when they bring from five to fifteen cents. Then we can sell them by the thousand. Many of them are shipped to New York and other large markets and this makes the demand very great. I have known of one market gardener who picked fifty thousand in one day and sold them in our market at four to five cents each. This was in the month of June, 1895. The cucumber crop is a very expensive one to grow as it requires so much care and heat. The coal pen grows lower very fast in cucumber time.

Lettuce.—This crop has been improved and the sale increased as much as any I can name. It is not only grown in the field but also under glass and may well be termed a continuous crop. The headed varieties are called Boston Lettuce all over the country, for the market gardeners of Boston and vicinity have done more than any others to bring these varieties up to their present highly developed type. Many times the quantity is produced today than was grown forty years ago. The varieties are much larger in size: five to six dozen filling a barrel now whereas it would have taken twice as many then.

The plain Hothouse and Crumpled Leaf varieties are grown under glass, and the Black Seed Tennisball, Big Boston, and Salamander out of doors. Lettuce is grown by the acre both in the field and under glass. In the house it will grow best in a cool temperature and a slight frost may not injure it.

Like many others the price of this crop has been greatly reduced and sells for about one half what it did forty years ago, but it is produced at a much less expense and sold in much larger quantities.

Onion.—This is one of the standard or moneyed crops of the market gardener. Years ago the seed only was sown but today those who wish to have another crop on the same land come off earlier, set out a small onion, which was raised the season before and kept through the winter, and thus they can produce a crop about a month earlier than from the seed. In this way a better

crop of celery for a second crop can be produced. The maggot has troubled the seed crop so much of late years that it is safer to put out the sets. There has been very little change in varieties the past forty years and the Yellow Danvers is still the leading variety as it was then.

Peas.—The varieties grown forty years ago were few compared to the great number now in use. All we have left of that time are the Daniel O'Rourke and Champion of England. Neither of these is very popular now.

I will not go into detail as regards the introduction of our leading varieties of today but will mention only some of the best for the market and for the home garden. The earliest pea is the Clipper, next the Nott's Excelsior, then comes Gradus, the newest or all. This is a fine market variety but does not yield as well as some of the others. McLean's Advancer for eating is the best of them all and is also a very good cropper. American Wonder is a very dwarf variety and for the home garden is one of the best. In quality it is the same as the Nott's Excelsior. The Stratagem is one of the best late varieties.

Of late years peas have not been grown extensively by the market gardeners about Boston as the destructiveness of the pea louse and the cost of picking have rendered them an unprofitable crop.

Radish.—For many years the long scarlet radish was the most popular but of late years the globe shaped variety is in greater demand. They are grown very easily and large quantities can be produced from a small tract of land. Very few of the long radishes are seen in the Boston markets now.

Rhubarb.—This is both an outdoor and a forcing crop. When forced and put into the market in winter and early spring it brings a very good price. When grown under glass it is quite productive. Very little, if any, was forced forty years ago but quite a lot was grown out of doors as we grow it today.

Squash.—The oldest of the present varieties are the Marrow, Hubbard, Crookneck and Scallop. These were all popular forty years ago and are still grown quite extensively today. Many new varieties have been introduced, two of the most prominent being the Essex Hybrid and Bay State, introduced in 1879 and 1886 respectively. They are the same in quality, are large producers and can be used for fall or early winter. The Hubbard for a late

keeper has held its own though it is not so prolific as some of the other varieties. The old Canada Crookneck is seldom seen in our markets today nor is the old time pumpkin, but there is a small sugar pumpkin, that is grown to some extent.

The method of culture is similar to that of forty years ago but today we have more insects to contend with. The change of climate also makes it difficult to grow squashes today. The past few years they have paid very poorly. When we get a good crop, they bring nothing; when we get a poor crop the price goes up, but it makes no difference what the price is if we have none to sell.

Tomato.—The past forty years have witnessed a great many changes in this crop not only in varieties but in many other respects. The Boston Market was very popular a number of years ago but very few are grown today as there are many earlier and better varieties. The Essex was an old variety and was introduced in 1860, the Essex Hybrid in 1873 and the Early Comrade in 1892. All of these were smooth, round and of a light pink color. The Acme, Paragon, Emery and General Grant are all smooth and of a bright red, as also are the Puritan, Stone, Belmont and Livingstone varieties of a more recent date. The Dwarf Champion is a popular variety on account of its bushy growth, thus enabling close planting for garden purposes.

Many years ago there were quite a number of canning factories located in the vicinity of Boston that put up tomatoes and bought their stock from the growers in this vicinity, but today there are very few of these factories here. They have moved further out and put up their stock near where it is grown for them by the farmers who sell their whole crop by contract. This is an improvement in one way as they get their tomatoes fresher and put them up in their proper season.

There is probably no vegetable grown that has increased as much in consumption as the tomato. It is on the table all the year round and no dinner seems complete without it. Tomatoes grown under glass are selling today for fifty to seventy-five cents per pound. Some are better for this purpose than others. The Lorillard is the best of these. The plants are started in the summer and come into bearing in the fall after the outdoor crop is done and continue to bear throughout the winter.

I have noted many changes in climate, crops and methods of cultivation but there is one thing in which there has been no change during the last forty years, except that resulting from higher cultivation, and that is the land itself.

There are today acres and acres of uncultivated land at a reasonable distance from market that will produce good crops, perhaps not as quickly as on our higher cultivated lands, but of a higher standard and better keeping qualities.

To these uncultivated lands I advise the young men to go, and, it they have a liking for and a knowledge of the business, they are sure of success. I am speaking from my own personal knowledge of men who have gone into the cultivation of vegetables during the past ten years. Nearly all are making a success of it and they constitute the best class of business men to deal with as you are practically sure of your pay.

They have to employ more capital than forty years ago but as that same capital can now be hired at a much cheaper rate of interest they ought to do as well, if not better, providing they attend to their business and work intelligently. By this I mean that they must learn what crops are best adapted to their land, also the demands of the nearest market, and then devote their whole time to these few crops and grow them in quantity. A market gardener will do better if he be located near a large city at a distance from Boston or New York than if he caters to these two cities alone, for the reason that so much southern truck is now sent to Boston and New York that these markets are often demoralized, whereas as outside market will afford a good trade and a steady price. Thus the market gardener is sure of his market but in order to be successful in the true sense of the word he must have a constant supply on hand and ready to market all the time so as to be able to take advantage of the market when it is at its best.

We are living today in an age of improvement and the vegetable business can well claim a prominent place amongst those industries in which the improvement has been the most marked. I have shown where many changes have taken place in all departments of vegetable culture. New ideas have been introduced whereby the cost of production has been reduced, while the production itself has been increased. The climate has changed thus rendering some crops unprofitable. Labor has been cheapened by

the introduction of machinery. The introduction of glass has made what may be termed a continuous season. Electric lights are now used to force a crop and are a success. Sterilization of the soil is practiced with a view to destroy all vermin, weeds and everything that is injurious to the crop, and is a great benefit, for now we can grow such crops as lettuce and cucumbers without the fear of their being destroyed by the fungi which heretofore had caused so much damage.

When we consider how great has been this progressive development it is no wonder that we would rather have 1902 with all its blessings and luxuries than 1862 with its hard work and old-fashioned methods. None of our profession have became millionaires but nearly all are well to do. They are very independent, live as well and as long as any other class of business men, and are the leading men in their respective townships. They have more time to themselves and get more good out of life and in all respects are much better off than the market gardeners of forty years ago. I do not know of a single thing that is not an improvement over the old times. Many of us love to look back and think of those old days but none of us would wish them back again. With the opportunities of the present day, I know of no other business whereby one can get greater pleasure than in market gardening providing he takes a sincere interest in it. I do not believe in a man engaging in a business to which he cannot devote his whole heart and soul and to which he is not adapted, but for a man who takes a liking to it, there is no business in the world so fascinating as the cultivation of vegetables for the market.

Discussion.

William C. Strong referred to the lecturer having said that electricity was now successfully employed, and asked him if he would state to what degree it was successful.

The lecturer said that he used the arc light and always had found it beneficial, crops being more luxuriant and maturing more quickly where it was used. He said that he used it up to one o'clock, A. M., the time when the current was turned off. He did not think it would injure the crops to use electric light even longer than that.

Varnum Frost disagreed with the speaker as to the use of electric light and thought the plants needed some rest. He thought many farmers who did not use electricity had quite as good results as those who did. He said that electricity gave light but not warmth, and that it was high temperature which made plants grow. He suggested that, if electric light *is* so beneficial, there should be remarkably luxuriant grass, shrubs, etc., around our street lights which burn all night. Mr. Frost said that the lecturer had spoken of certain crops which failed. He thought many could remember the time when these crops, fruit especially, did not fail. Forty or fifty years ago pests and blights which trouble us now so much did not exist. He thought, judging from the success farmers formerly had with their crops, that they knew *something* then, and he said that he considered farmers of today less prosperous than those of forty years ago.

Michael Sullivan thought that comparing the farming of forty years ago and that of the present time was like comparing the modes of transportation then and now. He said that if the farmer of forty years ago, with his knowledge, could have had the market we now have, he would have become independent in five years. We have everything to contend with now. A box of strawberries, for instance, can now be had for twenty-five cents at a season when, formerly, we could get twenty-five cents a berry. Cheaper transportation brings all kinds of produce to us continually, making competition much closer. However, there is still a good living to be had from farming, in New England, and young men would do well to take some of the lands now standing idle, put in fertilizers and prepare the land for the crop to be grown; then, if there were good roads, making it easy to get to market, they would succeed.

New England is neglecting the production of apple and pear trees. The injurious insects, etc., which have been spoken of, should not be so great a bugbear. It is quite a simple matter to spray with Bordeaux mixture, which is a remedy for many evils of this sort. One must, of course know when and how to apply the mixture.

The great trouble with market gardening seems to be the market. It is very hard to foresee just what crops to raise. Most farmers overdo some crop. They are very apt to raise some par-

ticular thing simply because other farmers do and then the market becomes overstocked. They must learn to study conditions and demands.

At the close, it was voted, on the motion of George D. Moore, that the thanks of the Society be presented to the lecturer for his very interesting paper.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 22, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

BIRDS AND INSECTS IN THEIR RELATION TO AGRICULTURE.

By E. H. FORBUSH, Ornithologist to the Massachusetts State Board of Agriculture.

The number of species of insects on the globe is vast and that of the individuals is beyond comprehension. It is greater by far than that of all other living creatures combined. More than three hundred thousand species have already been described and there are many thousands of undescribed species in museums. Dr. Lintner, the late distinguished entomologist of the Empire State, considered it not improbable that the number of species would reach one million. Each of these species is enormously productive and it is undoubtedly true that were the progeny of one pair of insects allowed to reproduce without check, it would soon cover the entire habitable earth.

The Rocky mountain locust in its flights filled the air and hid the sun. From the high peaks of the Sierra Nevada it has been seen filling the valleys below and the air above as far as a powerful field glass could bring the insects within focus. The chinch bug covers the corn and grain fields in countless millions over towns, counties and states. The army worm moves at times in solid masses destroying the crops in its path.

The voracity of insects is almost beyond belief. Dr. Lintner says, "A certain flesh feeding larva will consume in twenty-four

hours two hundred times its original weight." There are vegetable feeders, caterpillars, which during their progress to maturity within thirty days, increase in a size ten thousand times. To reach this remarkable growth a man at his maturity would have to weigh forty tons.

In view of such facts, it will be seen that insects, by reason of their enormous multiplication and great voracity, may become far more dangerous to crops if unchecked than larger and more powerful animals.

It may be truthfully said that this country suffers far more from the depredations of insects than any other. And this is to be expected, in view of the methods employed in agriculture in this country, and the conditions under which it is here conducted.

A considerable proportion of the fertile land in America is still uncultivated and there are vast tracts in which insects can breed unmolested until they exhaust their feeding grounds and overwhelm the surrounding country, as in the case of the migratory locusts. In the settlement and development of a new country man at once begins to disturb the long established relations between living organisms. In a forest country the woods are cut off, the larger birds and mammals are exterminated or driven away, and great disturbances occur in the economy of nature as a consequence of these changes; new plants are introduced and with them new insect pests are brought in from other regions or from foreign countries. As civilization advances large areas like the great grain farms of the northwest, the orange groves and vineyards of California and the great orchards and potato fields of other states are devoted to special crops. These tracts offer great quantities of desirable food and thus stimulate the reproduction of insects to a remarkable degree. The spread of imported species to the very confines of civilization is accelerated by an ever increasing traffic on newly constructed highways and railways, and, as these imported insects escape most of their natural enemies by being brought to this country and find more favorable conditions awaiting them here, their fecundity and destructiveness are increased in undue proportion even to their increased food supply. Such are the cabbage butterfly, the wheat midge, the Hessian fly, the gypsy moth and others. Native species which were harmless to agriculture under natural conditions in the wilderness sometimes

take advantage of the introduction of a new and succulent food plant and follow it back from the frontier into the agricultural regions, spreading over the whole country and causing widespread injury to a staple crop, as did the Colorado potato beetle. As the country becomes settled and the ravages of insects increase, the settlers, instead of endeavoring to protect and foster the useful birds that were designed by the Almighty to dispose of the surplus insect production, pursue them with the gun and poison until the large useful species are nearly if not quite extinct. The wild turkey, grouse, prairie chickens, wild pigeons, ducks and geese, plovers, wood-peckers, blackbirds, larks, robins, and all birds which are "good for food" are slaughtered relentlessly and without quarter even at the season when the callow young must perish from starvation. The grasshopper-eating buzzards and all hawks and owls are shot at sight, anywhere and everywhere, by all classes of people. Many States offer bounties on the heads of supposed noxious birds, without being aware that such a policy is undermining the agricultural interests. Small birds are hunted for their feathers; bird egging boys increase apace; a million cats forage the fields and woods; fashion calls for millions of birds to deck the ladies' headgear. In the meantime insects increase and run riot. The locust, the chinch bug, the army worm, the codling moth, the plum curculio, the cabbage butterfly, the boll worm, the asparagus beetle, the canker worm, bugs, beetles, aphides, borers, grasshoppers and other insects destroy the ripening grain, sap the lusty fruit tree, devour its leaves, despoil the garden, field and forest and render the life of the successful farmer one continual battle with his insect foes. During the locust invasions in the west hundreds of small farmers lost their all and becoming destitute were forced to leave all they possessed and remove to more favored lands.

In 1854 the loss occasioned in New York State by the wheat midge (*Diplosis tritici*, Kirby) was in excess of fifteen million dollars.[1] The value of wheat and corn destroyed in Illinois in 1864 by the chinch bug (*Blissus leucopterus*, Say) is estimated at seventy-three million dollars.[2] The loss in the four States of

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[1] Estimate given by Dr. Fitch, State Entomologist.

[2] 1st Annual Report of Injurious and Other Insects of New York State, By Dr. J. A. Lintner, Albany, 1882, p. 71.

Kansas, Nebraska, Iowa and Missouri during 1874 from the ravages of the Rocky Mountain locust is estimated at one hundred million dollars;[3] while the annual loss caused by insects in this country is said to be from three to four millions.[4] What wonder then that the farmer is taking desperate means to protect his crops! What wonder that deadly poisons disguised as insecticides are scattered by the ton over the foliage of many of our most important food crops, and that the experiment stations are continually searching for means to quell the annual or periodical raids of insect pests. And yet, strange as it may seem, the most distinctly visible and noticeable of all the influences provided by nature to prevent or control this insect surplus is almost wholly ignored, or worse, neutralized, by the people whom it seems especially designed to benefit. The land birds, that are by their structure, by their habits and preferences especially adapted and designed to consume great quantities of insects are not encouraged, fostered, or protected, but are pursued and slaughtered without mercy. Many of them are regarded as nuisances and pests and their services to agriculture are either entirely ignored or strenuously denied. Now let us look at this question of the utility of insect-feeding birds in the light of reason. There are absolutely no other creatures upon this earth that are so well fitted for searching out and destroying most kinds of insects in all places and at all seasons, over wide area as are the land birds and especially the smaller species. Wherever they are sufficiently numerous they will exert a strong influence for the suppression of any undue multiplication of insects. The very minute insects are all that are likely to escape.

A few of the reasons why birds are useful in checking insect invasions are obvious.

1. Birds by their powers of flight and telescopic visions are admirably adapted to search for and to find food over large areas, as well as for a sudden and swift pursuit of it and an unerring descent upon it when found.

2. The young of most land birds require a great quantity of insect food for their perfect development and, therefore, are raised at a season when their insect food is most abundant.

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[3] 1st report U. S. Entomological Commission, 1877, p. 121.

[4] Report U. S. Dept. of Agr. 1884, p. 324.

3. During this season the parent birds go to those points where insects are numerous that they may easily secure a sufficient supply for their young.

Hence birds gather in numbers wherever great insect outbreaks occur and not only destroy many insects themselves but feed still more to their young. This gathering continues from season to season until the noxious insect is so reduced in numbers that it is lost to common observation.

The full fledged birds are to a certain extent omnivorous and are thus able to subsist when insect food is difficult to obtain. In winter certain birds are quick to find those localities where the eggs of insects are plentiful.

It is at once seen how well certain families of birds are fitted for the pursuit and capture of certain families of insects. The thrushes dragging unwilling cut worms and grubs from the ground; the ground sparrows gleaning among the leaves and undergrowth for ground beetles; the woodpeckers drilling into the trees for borers; the creepers, nut hatches and titmice searching every crevice and cranny in the bark of the trees, extracting the hidden grubs, eggs and caterpillars; the warblers, vireos and wrens searching the twigs and foliage of plants and trees for the wary insects hidden there; flycatchers, bluebirds, swallows, warblers and swifts, cleaving the air in all directions and snapping up their flying or perching prey; the hawks and bitterns destroying grasshoppers; the owls, night hawks and whippoorwills noiselessly flitting about, pursuing the large night-flying moths, beetles and mosquitoes; all give evidence of perfect adaptation to the pursuit and capture of the insects on which they feed.

Birds of many species follow locust invasions and gorge themselves to repletion. It is a well known fact that birds assemble wherever the larvæ of moths, appearing in great numbers, strip the foliage from the trees. Birds quickly discover such localities and at once resort to them, seeking them as magazines of food supply for their young. I have observed blackbirds flying half a mile over the meadows to a spot where larvæ were plentiful, returning after each visit with caterpillars in their beaks, to feed their young. They seemed to prefer to travel this distance to a point where food was plenty and easily obtained rather than to search for it in the immediate vicinity of their nests. An orchard infested by canker

worms is visited by birds from far and near and the outbreak is generally checked in one or two seasons, if birds are sufficiently plentiful in the neighborhood. The amount of insect food which young birds will consume is not generally understood. Mr. E. W. Wood of Newton, a well known member of the State Board of Agriculture, informs me that during one season when the spring canker worms (*Anisopteryx vernata*) became quite numerous in his orchard, a pair of Baltimore orioles appeared and built a nest near by. In the meantime they fed daily upon the canker worms. This they continued to do so assiduously that by the time the young were hatched the numbers of the worms were considerably reduced. The birds then redoubled their diligence, carrying ten or more worms to their nest at once. Soon the canker worms in that orchard were a thing of the past. The foliage and fruitage were saved for that and succeeding years. Audubon says a woodcock will eat its own weight of insects in a single night. Samuels quoting from the experiments of Professor Treadwell shows that it was found necessary to feed a young robin forty-one per cent more than its own weight of worms in twelve hours to assure its healthy growth and development. It was found that the bird would consume nearly half its own weight of beef in a day. A man at this rate would eat about seventy pounds of flesh daily. Should a pair of robins have four half-fledged young to provide for, each parent would be obliged to secure a worm or its equivalent every five minutes, for at least ten hours each day, to supply the young with needful food. Wilson Flagg found by experiment that young robins required only insect food and remained healthy and vigorous on that alone. What is true of the young of a robin is undoubtedly true of the young of many other birds. Dr. Brewer says that a pair of jays feed their young five hundred thousand caterpillars in a season. Anyone who will watch robins, wrens, cuckoos, jays, woodpeckers and other birds, while they are feeding their young, will become convinced that the number of insects destroyed by birds is beyond calculation. Many birds eat the eggs of insects, and Dr. Brewer says a pair of jays will destroy a million eggs every winter.

The lecturer next took up the different families of birds in detail, illustrating his remarks by lantern slides of many of the more common and useful birds. This part of the lecture being

interspersed with references to the illustrations cannot be properly reproduced without them. Among the birds mentioned as particularly useful to agriculture were the vireos, sparrows (excepting the English sparrow), the swallows, tanagers, woodpeckers, chickadees and nuthatches. The crow and the robin were regarded as useful or injurious according to circumstances. The lecturer closed with some remarks on the usefulness of the migratory birds, with illustrations of their haunts both north and south, in cultivated lands and in the wilderness.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 29, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

SOME FAMOUS GARDENS OF THE WORLD.

By MISS HELENA T. GOESSMANN, Amherst.

Abraham Cowley, an old English writer of the seventeenth century, in writing of Agriculture and kindred subjects, says "God the first garden made, and the first city, Cain." A little later, in one of his books or essays entitled "Agriculture", he says, "The three first men in the world were a gardener, a ploughman and a grazier; and if any man object that the second of these was a murtherer, I desire that he would consider that after he was so, he quitted our profession and turned builder." So one sees, even in these whimsical, witty, humorous impersonations of Cowley, the tribute to the occupation of the gardener, the tiller of the soil, the planter of flowers.

The two greatest events of Christian history are associated in our minds with garden lore and garden life; the beginning of man's history in the Garden of Eden, and the beginning of the tragedy of the New Testament in the Garden of Gethsemane. Solomon in his song says, "A garden enclosed is my sister, my spouse," and Homer in the Odyssey eulogizes the beauty of

his garden where the ripe grapes hang down and the scent of the flowers makes the day joyful; where the work of man and the work of the Creator are one. Plato, you know, thought out his philosophy in a garden embowered in thyme and surrounded by fountains and walks, and when the people of his native city objected that the location he had chosen was unhealthy and wished him to live nearer the *Kathemnia*, he said, "I have my garden and in my garden I can think."

Xenophon tells us that when the Greeks sent an ambassador to Cyrus with gifts, he found him in his garden, and not only was Cyrus delighted with his garden, but he took great pride in showing the ambassador about and pointing out trees and plants which he had placed in the earth with his own hands. Aristophanes received inspiration from his garden, and here were probably suggested to him some of the pictures he gives us concerning the political personages of his time. Pliny the Elder eulogizes garden life; Pliny the Younger describes his own garden, where the water flowed down in cascade form, and marble images presided over a circular basin always full but never overflowing. Here he tells us that he ate his midday meal and the dishes of food floated in china fruits and flowers formed upon the water's surface which served as a table.

Saint Jerome wrote, thought, prayed and dogmatized in his garden, and a Chinese writer of the eleventh century speaks particularly of three flowers peculiar to his country,—the chrysanthemum, the pæony and the lily. He says, "In my opinion the chrysanthemum is the flower of retirement and culture; the pæony, the flower of rank and wealth; and the water-lily, the Lady Virtue *sans pareille*."

Petrarch speaks of his Garden of Apollo, all light and brilliant with flowers and fountains. Here he spent the merry hours, the hours of social exchange of the day; but to his Garden of Bacchus, almost strictly classic and secluded, he retired for his hours of composition and study.

Boccaccio, in the fourteenth century, praises the garden, and Erasmus, in the fifteenth century, suggests a scheme of color, simply anticipating in a way, Alfred Austin, who says that "exclusiveness in a garden like exclusiveness in society is a great mistake."

Sir Thomas More in his writings, and Montaigne in his essays advance the same views, and Sir Francis Bacon suggests that every gardener should have his garden arranged in a succession of blooms so that each month of the year should have its wealth of blooming flowers peculiar to the season, and thus never present an appearance of desertion.

Milton, in the seventeenth century, who learned so thoroughly the truth of his own philosophy, "They also serve who only stand and wait," speaks of this same lack of system in the gardens of his country. Alexander Pope in his letters similarly arraigns the English garden makers for the lack of harmonic simplicity. Yet not so many years later Byron blames Milton and Pope for the confusion of the average English garden. He claims that the English have destroyed their forests, have gone away from the beauty of nature and have made fashionable a stereotyped form of garden for the public, and he thus blames these two men who were all their lives discussing this lack of system. Pope had as a gardener John Serle, who passes into fame through the history of the garden at Twickenham; the garden which was a wonderful study, yet it seems rather an amusing thing to think that Pope should ask for classic simplicity, when from five acres he evolved such a garden that people thought him the owner of twenty-five. It was a series of labyrinths and fountains, and at the close led up to the loved tomb of his mother.

One always thinks of and sees England as a country of gardens. The quaint Hampton Court Gardens, surrounding the palace itself, a creation of the time of Henry VIII, with its thousand apartments, present an interesting study to the student of architecture; neither palace nor the gardens are materially changed since Henry's time. The latter gives one the idea of the tree arrangement and the box hedges, the combination of the French, the Dutch and the English. One Queen, (I think the wife of George II,) disliked very much the presence of the box hedges and caused all of them to be torn up, rather destroying the Dutch effect; but after her death they were all replanted, and are flourishing today. Then, too, at Hampton Court, in the Maze and in the Orangery, while tracing the work of Kent and the influences of André Le Nôtre, the great French gardener, one gets a liberal study in landscape gardening. However, it is not to the French that the English owe the develop-

ment of their garden system. You have all heard of that good man called "Capability" Brown, who did so much for the English parks. He was always discussing the capability of the earth and the capability of the country, and though his work was filled with mannerisms, he first developed the idea that the woods should be preserved. He had many friends as well as enemies among those interested in the so-called development of the landscape. He was heard to mutter many times before his death, "Oh, Thames, Thames, will you ever forgive me?" simply because he had caused the water of this river to be turned and utilized through the grounds of Blenheim. This was considered by the English of that day almost a desecration of this time honored stream.

However, if one wants to see English gardens in the completest sense, the Isle of Wight is the place to study them. There the traveler finds the richness of the flowers, the general cultivation, the intensifying, as it were, of nature's charms, without the destruction of them. There is one place in New England that gives you a fair idea of the Isle of Wight as one might gaze upon it from Carisbrooke Castle, and that is the view looking northwest from Mount Tom, with the patches of cultivation, the river, the roads and the farm homes. I never see that view in high summer without wanting to close my eyes and transport myself back to some pleasant weeks spent in the Isle of Wight. The poppy which with us is a cultivated flower, grows wild on the Channel Isle and the vast fields of yellow wild mustard in combination with the former make a wonderful picture. Here are hedges of thorn and box everywhere and even the simplest little cabins are covered with rich and luxuriant growths of roses many of them being so large and beautiful that you are surprised when they are offered for sale at the door of your coach for a few pennies, the same blossoms you would pay dollars for in our greenhouses. Everybody appears laden with roses. There is not yet, even in its larger towns, a savor of London about it and the preferences of the late Queen for its home life have kept much of the country simplicity there. The court life at Osborne House is like country life. The only mausoleum in the church there (Wappinham Church) is the marble tomb of the Prince of Battenburg, across the top of which lies a long rusty sword. On the hilt was bound a wreath of French forget-me-nots. I asked the care-taker who placed them there

and he said that every day when Princess Beatrice was at Osborne House she and her little family came over two miles and brought a wreath of French forget-me-nots to lay on the tomb of the father and husband, and when she was absent the gardener was instructed to do the same tender office in her name.

There has been no biography, perhaps, better deserved, in the history of the French landscape, than that of André Le Nôtre. He was the man who developed Fontainebleau and Versailles and gave the first impulse which preserved to the country the Bois de Boulogne. He was loved of kings and sovereigns, and his epitaph written by Saint Simon claims that one thing can be written of him; he was never an artist with a price; whenever there was a bit of nature to be developed he would put the same thought into his work whatever the compensation might be. He loved nature and worked for it. You realize the presence of such influence when you spend a few hours in the Bois de Boulogne, you see how from a country untilled and land poorly drained it has been developed into, perhaps, one of the most beautiful and attractive parks in the world. The French garden has never influenced the English garden as the English has the French. The country of France abounds in old fashioned flowers, but the French garden is a garden of continuous artificial effects. You can enter an English garden of a large domain and you are positive of what you will find there; you will find the arbors and the walks and the fountains. When you come to the French garden you turn a little group of trees or shrubbery, and where you expect to find a seat you find a nymph, or where you expect to find a fountain you find flowers, yet when you are tired or weary, there is always a comfortable seat. It is filled with surprises like the country itself.

To get, however, near the land that has made the garden a part of the home, one must go to Germany through Holland. You must come in touch with the Delft and the Old Haarlem spirit; see the fields of hyacinths, crocuses and tulips, and scent their odor in the air. In all the shops these blooming flowers are for sale, and tempt to extravagance the lover of flowers. There was a time in the eighteenth century, when bulb growing was the principal occupation of the Dutch people; when they gave up their speculations of every other kind, and their commercial interests for this. Then people made princely fortunes in the sale of these bulbs. There

is a story told of the almost miraculous escape from extermination of that famous bulb, the *Semper Augustus*. I cannot vouch for the story, but this is it. A merchant owned the last two bulbs of this variety of tulip. He intended to plant them eventually but he wanted all his friends first to realize his unique position, and placed them in a conspicuous place on his desk. He hired a man at one of the wharves to carry a parcel to his office, and the good fellow, not being paid for his services according to his own ideas, when the master's back was turned, put the two bulbs in his pocket thinking they were something good to eat, and then betook himself back to the wharf. He had just eaten one of the bulbs when he was interrupted in his feast by the arrival of his employer, who arrested him, accepting no explanation, and had him immediately put in jail. He had a very difficult task in clearing himself, and when he got finally off all he could say was, "It was a pretty poor onion at that!" They tell you that story often in old Haarlem and claim that from the rescued bulb came all the others of that name now growing in gardens.

When you leave Holland and pass out of the country of dykes, windmills, quaintness and solidity of charm, you come into Germany, and there you find the garden and the home are closely connected. No matter how small and unpretentious the house, there is always a garden, a little trellised arbor and rustic table and chairs at the rear of the house. There the family take their afternoon coffee, the hausfrau sits and knits, the neighbors come in for exchange of gossip and the men rest, smoke, and have their beer while discussing the doings of the day. There is much encouragement for true gardening in Germany. It is one of the most cultivated of lands. Going west, east, north and south it presents a perfect patchwork of gardens. The farmers do not live on their farms; they live in towns or dorfs, and you will find the homes of the people grouped about the church and the casino, while the adjoining country is marked off for farms. There they go during the day to work and return at night, so there is nothing of that isolation that is found in New England where the farms are perhaps miles apart and travel to and from them often almost impossible during some periods of the year.

I was walking one day beside Lake Constance in the Swiss country near Meersburg, where the old castle of the Counts of

Meersburg hangs on the heights above the latter town. One naturally gravitates toward the church yards in the old world villages because sometimes there you find a bit of missing history of the place, and you often learn interesting facts from the care-taker, who seems to know everything of interest in the town. Among the graves there was one with rather an imposing monument. All the rest were marked by simple little wooden crosses. I asked the old man in charge who it was and he said he did not know; probably, however, somebody who had died before his time at the castle above. On the front of this monument was a crest of nobility and underneath the name Elizabeth von Drost-Hülshoff. I thought it would be very interesting to know who she was and why she was buried so far from her native part of the country, her name being of north German origin. After inquiry in Lucerne of people who had been at Meersburg, and learning nothing, I dismissed it. Some months after I was in Münster, the historic capital of Westphalia. Walking one day upon the old ramparts of the city, I came upon a statue of a woman with a quaint peculiar face, very much after the fashion of Mrs. Browning or Mrs. Hemans, the old-fashioned, classic, intellectual face. I looked naturally for the inscription beneath this statue and found the name "Elizabeth von Drost-Hülshoff, erected to her memory by her loving townsmen in appreciation of her worth, merit and ability." I learned there that she was a poet of the people, the German Longfellow of fifty years ago. She was in another sense the Adelaide Proctor of Germany; a poet of sentiment who appealed to the masses, and every German school girl of twenty-five years ago had learned passages of sentiment from Elizabeth von Drost-Hülshoff in the same fashion that our old fashioned school girls learned of her English contemporary. She lived in the old castle in the town of Münster and the castle was now in the possession of her nephew. This information given me willingly was followed by an invitation to drive to her home, which we did. We had to leave our carriage a mile away from the gates of the estate because of the badness of the roads; it being early in the month of a rainy April. When we reached the castle we found her nephew, the Baron von Hülshoff, a quaint old German gentleman in possession and he made us most welcome. What interested me most was the garden which she had planted herself and which was still a beautiful picture from the

windows of her small apartment at the south end of the house. One looked down upon a tiny lake on which floated live swans. There was a rich growth of ferns planted all about; in the front of the garden an arbor and a little rustic coffee house looked most attractive. The whole effect of, perhaps, the four or five acres of garden was the same effect she had arranged in 1830, and the fidelity of her family to her memory had kept that garden just as she had left it. It seemed almost, with her broken lute standing in the corner of the room, her portrait looking genially down upon us from the wall and little touches of her art here and there, that one was justified in imagining that she still lived there, and that her spirit pervaded the place. This was only a typical German garden; and repeated itself by Eder and Danube daily. However, there seemed to be between Hohenheim and Stuttgart, perhaps, the greatest variety of German garden cultivation that is found anywhere. The traveler sees the mountain, the forest, the dell, the cultivated garden, one succeeding the other, a beautiful ideal of scenery, and yet every acre of forest or garden is kept in order.

"Elizabeth in Her German Garden," which we have so enjoyed, is a fair idea of the German garden life and the German inspiration of a garden. However, we are not obliged, as a people, to cross the ocean to find gardens of perfection. We have what nature has given us at Yellowstone Park; we have the Adirondack Mountains, the White Mountains and the Green Mountains; and we have parks such as Central Park and the beautiful gardens of Boston, the Public Gardens.

There was a time when the natives of Massachusetts planted corn that they might cover the graves of their dead and conceal the number from the vigilant eyes of the Indians; and today there are some who wall in their beautiful gardens that they may conceal them from the eyes of the curious. This walling in of a garden is an unholy survival of the feudal days. The progress since that day, in the evolution of gardens, is as great as the progress in any other line of development or work in this country.

Speaking also of the debt one owes to one's native town to assist in making it more beautiful, I have in mind a little village in New England, where was very forcibly illustrated, within a year, the effect of a garden or no garden on the entire community. I remember passing occasionally one house where the poor mother

had little time to think of the plot of ground outside; she had her children to feed and her house to care for. I used to think of this garden as an index to every yard in the street, for they were all of the same character. One day I had occasion to spend a few hours in this village after an absence of months, and passing through that same little street I found that the tenant of this tiny house had moved away, and in her place had come one who realized the possibility of her half acre of garden. She had planted in good order the old fashioned flowers, the house had been painted, vines were trained over it, a little attempt at a rustic arbor had been made and a tiny brook that ran through the yard had been bridged over. This example had spread like a contagion down that entire street. Not a house but had acquired at least a window box or some blooming flower pots to grace its front. The effect of this one woman, having the taste and enterprise to beautify with her own hands her little home, had affected the entire neighborhood.

Some observer in the country said to me the other day, in deploring the incoming of the trolley car, that our country roads were no longer safe for driving as of old but made the remark, "However, the trolley has done a wonderful thing for the front yards." True this is and as we go through the villages and towns we find one person is led to improve because a score of others will ride by viewing.

There are some however who do not appreciate the joys of the country; they have lived so long in the noise and excitement of the great city that to them the country is synonymous with isolation and the blues. Let them once taste for a few months of the year the happiness of looking out from their own windows over a beautiful country, of watching for the first song of the birds and the first fragrant flowers of an early spring day and there will be experienced an elevation of the soul that will make one more patient and philosophical in life.

A certain clerical friend had however a peculiar experience in trying to put this love of nature into a good old woman. She had been for many years a trusted employee in his family, but having grown old and tired in service had gone to live in rooms of her own in a plainer quarter of the town. Her old master felt badly to think of her spending the hot months in the place where

she was, and so he went to her one day and said, "Jane, my wife and I are going to Europe for the summer and we are going to have a nice cool summer in England, but we can't go away and leave you here, and I want you to try country life while we are away." She said she was very willing; it impressed her as being a variety, at least. So he took her up the Hudson and placed her in a very comfortable farmhouse in care of a good kind hearted woman, paid her board and left her with a goodbye and a feeling that the poor old soul would at least have comfort and coolness. He returned in September, and proceeding up the Hudson, found that Jane had flown weeks before, in a very unceremonious manner back to town. There he went and found her sitting in her attic room in a five-story tenement house, surrounded by her household gods and happy. And he said, "Jane, how could you do this? You are not strong and you need fresh air; why didn't you stay in that beautiful home?" She looked at him and said, "It's a deal better living among people than living among stumps." Jane had grasped the country living in the narrow sense.

There is a philosopher of our modern day who says, "Show me the garden of a man and I will tell you his character and his morality," and perhaps the tribute we owe to the friends of gardening can best be summarized in the words of Charles Dudley Warner who says, "the man who plants a garden is a benefactor to the human race."

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).—Bulletins 4-6 (1884), 7-10 and 1-4 (1885), and 5-9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).—All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona.—4th Annual Report, for 1893.

Arkansas.—Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.—Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.—Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.—Annual Report for 1892.

Indiana.—(Purdue Univ. School of Ag.).—Bulletin 1. College Reports 1 to 14, inclusive.

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.—Bulletin 10.

Michigan.—Special Bulletins 1, 3 and 5. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri.—Bulletins 9, 13, 15, 16, 19, 20. 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

New Jersey.—Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico.—Eighth College Catalogue, 1897-98.

New York (Cornell).—1st Annual Report, 1881-82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina.—Bulletins 1 to 56, inclusive, and 69, 2d ed. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1-21, 1888; 1-24, 1889; 1-25, 1890; 2 and 4, 1891.

North Dakota.—4th Annual Report, for 1893.

Ohio.—All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma.—All Annual Reports previous to that for 1896-97, except that for 1893-94.

Pennsylvania.—Annual Reports for 1869, 1872, 1879-80, 1881, 1882, 1883 and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.—All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1-5, 1883-1887.

Virginia.—10th Annual Report for 1898-99.

Washington.—Bulletins 28 and 29. 6th, 7th and 8th Annual Reports, for 1895-96, 1896-97, and 1897-98.

West Virginia.—Special Bulletin—Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries.—Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY,
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SEE LAST PAGE OF COVER.

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Robert Manning; from a Photograph taken 1890.

Courtesy of the American Pomological Society.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 5, 1902.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

As soon as the President called the meeting to order, Theodore H. Tyndale raised an objection, stating that the meeting had no Secretary. It was, however, stated by the Chair that Mr. Kidder had been appointed by the Executive Committee to succeed Mr. Manning, and when Mr. Tyndale was shown Section XIV he at once withdrew his objection.

The Secretary then read the records of the last meeting, both Mr. Manning's notes and the amplified records.

Richard M. Saltonstall moved, That the records as read by Mr. Kidder, the Secretary, of the doings of the Society at its Stated Meeting held January, 1902, are approved and are hereby adopted as the records of the Society, and that the Secretary be authorized and directed to sign said records.

William C. Strong protested against the statement appended to the records and moved, That that part of the record which now reads as follows, "The proposed Constitution and By-Laws as given below were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting of the Society on the first Saturday in April," be canceled and instead thereof the following amendment be recorded, to wit:—

"The proposed Constitution and By-Laws as given below were briefly commented upon by Messrs. Elliott, Strong, and others, and further explained by Mr. Saltonstall. The previous question was then called for by Augustus P. Loring and was put to vote by the President, who declared it passed by a large majority. A motion to reconsider this vote failed to pass."

Francis Blake made remarks supporting the records as read. Mr. Strong defended his own motion.

The Chair stated that at the January meeting he had construed the call for the previous question as being intended to stop debate.

Arthur D. Hill now seconded Mr. Saltonstall's motion.

William H. Elliott asked for the re-reading from Mr. Manning's minutes of the January meeting of the motion to enter on the records the proposed new Constitution, which the Secretary then re-read.

Mr. Loring stated that his motion at the January meeting was to enter the proposed Constitution on the records.

Mr. Blake stated that he had then moved the previous question.

The Chair stated that he had put only the previous question.

Arthur D. Hill stated that this was strictly parliamentary, that the previous question had been put and also the motion to spread upon the records.

Mr. Strong stated that there had been a misunderstanding, that the previous question had passed and he thought no other.

Edward B. Wilder seconded Mr. Strong's motion in regard to expunging certain portions of the record as read.

Mr. Saltonstall stated that he had moved and read the proposed new Constitution, that after some discussion Mr. Blake had moved the previous question and that it was carried ; that Mr. Loring had moved that the Constitution be spread upon the records, and that Judge Hoitt had seconded that motion. He renewed his motion to approve the records as read by the Secretary.

Mr. Strong re-read his amendment.

Mr. Saltonstall stated that Mr. Strong's motion put off the whole question of the new Constitution so that no action could be taken on it that day.

Edwin H. Jose stated that what we wanted was to get the records correct, not necessarily the new Constitution.

Mr. Tyndale remarked that Mr. Loring should be able to give the correct version of the proceedings.

Mr. Loring stated that he had moved that the new Constitution be spread upon the records after Mr. Ware had taken the chair.

Judge Hoitt stated that he had been at the meeting, that Mr. Loring had moved, as stated, the new Constitution and that that was what was called for when the previous question was moved; that it was the same as the main question; that the Chair had put the main question for the previous question.

Mr. Strong's motion to amend the records was put and lost.

Mr. Saltonstall renewed his motion that the records be approved. Mr. Elliott entered a protest against their approval, and said he should contest it on legal grounds.

The Chair asked Mr. Saltonstall if he meant by his motion to shut off discussion, to which he replied that he most assuredly did not. Mr. Saltonstall's motion was then put and carried.

The report of the Treasurer was presented and General Appleton moved that it be accepted and spread upon the records. Benjamin P. Ware called for its reading. Mr. Blake moved that the Secretary have it printed and mailed to every member of the Society. This was voted, and the Chair called for its acceptance and it was voted to accept it.

The Chair stated that deferred and new business was in order.

Mr. Saltonstall moved, That the amendments to the Constitution and By-Laws proposed at the Stated Meeting of the Society duly held on the first Saturday in January, 1902, in favor of the adoption of which a majority of the members of the Society present at said meeting then voted, and which are entered on the records of the Society be and they hereby are adopted.

J. Allen Crosby moved that when the vote is taken the check list and ballot box be used and that the polls be open two hours.

The Chair appointed J. Allen Crosby, Aaron Low, and E. W. Wood as a committee to receive, assort, and count ballots. General Appleton moved that we proceed to ballot.

Mr. Jose thought we should have further discussion, though he stated that he was not opposed to the new Constitution.

Mr. Blake thought that everyone had had sufficient opportunity to become acquainted with the proposed Constitution.

The previous question was then called for by Mr. Jose.

Warren W. Rawson moved adjournment, which motion being put, the Chair declared himself in doubt and called for a show of hands and declared the motion lost.

The previous question was called for from all parts of the house.

The Chair declared that Mr. Ware had the floor and that everyone who wished should have a chance to talk.

William B. de las Casas called for the reading of the By-Law under which the Chair refused to recognize the previous question. The Chair read Section XXVII on Amendments.

Mr. Ware continued to talk against the new Constitution, in the midst of uproar. Mr. Saltonstall asked permission to say a word but Mr. Ware would not yield the floor. Philip A. Chase rose to a point of order but was not recognized by the Chair.

The previous question was again called for.

Mr. Saltonstall said that the new Constitution had been twice read at the January meeting, thoroughly discussed and spread upon the records, but he proposed that it be open to limited discussion for half an hour and that he was ready to answer any question in regard to it.

Mr. Strong thought that the meeting had better vote at once. Mr. Elliott wanted half an hour's discussion.

Mr. Jose withdrew his opposition to proceeding to a ballot.

Mr. Saltonstall wanted to amend the motion to keep the polls open two hours, to keeping them open but one hour, and so moved, but afterwards withdrew his motion.

The Chair stated that a motion to proceed to ballot seemed to him in order.

Mr. Elliott thought that some discussion should be allowed.

Mr. Blake again called for the previous question and it was carried.

Mr. Saltonstall moved that the house proceed to ballot upon the new Constitution.

The polls were opened at 12:38, and the ballots were Yes and No.

Mr. Saltonstall asked that as many as could, come back at the end of the balloting, about 2:30 o'clock.

The Chair declared that after the vote was taken, no reconsideration could be had, so that no one need stay from any apprehension.

Mr. Ware, as senior Vice-President, now took the chair, as Mr. Hadwen was obliged to leave.

Mr. Crosby gave warning of the closing of the polls at two minutes before the time for them to close, and at 2 :38 announced that the polls were closed.

The ballot committee now proceeded to assort and count aloud in the presence of the meeting, but especially under the eyes of General Appleton, Messrs. Hill, Wilder, and Rawson, first counting every ballot and dividing the yes and no ballots into two piles. Then each pile was counted.

While the balloting was going on, the Chair read the printed ballot of candidates for membership, and stated that all the names would be voted on at once if no objection was made. The ballots were then collected by Edwin A. Hall and the Chair declared elected, as members of the Society :

Miss Caroline P. Atkinson of Brookline,
Robert M. Bailey of Dedham,
Clifton P. Baker of Dedham,
Edward W. Breed of Clinton,
John C. Bullard of Cambridge,
Norris F. Comley of Lexington,
Mrs. Lilian H. Farlow of Cambridge,
James Garthley of Fairhaven,
Richard C. Manning of Salem,
Fred. R. Mathison of Waltham,
Horace E. Ware of Milton.

The Secretary read the following letter :

Salem, Mass., February 21, 1902.

Charles E. Richardson, Esq.,
Treasurer of the Massachusetts Horticultural Society.
Boston, Mass.

Dear Sir : — The brother and sisters of the late Robert Manning, for many years Secretary and Librarian of the Massachusetts Horticultural Society, desire, through you, to express their gratitude to the members

who sent a beautiful wreath in the name of the Society, to the funeral on Wednesday, and to all, who, by their presence at the services, testified to the high esteem in which they held their departed associate.

Very respectfully,

RICHARD C. MANNING.

The Secretary also read a letter from Mrs. James Comley, thanking the members of the Society for their sympathy extended to her on the death of her husband.

Mr. Crosby now reported for the committee to receive, assort, and count ballots on the new Constitution, that there had been cast a total of three hundred and forty-seven votes, of which two hundred and four were yes and one hundred and forty-three no, and the Chair declared the motion was lost, a two-thirds' vote not having been cast for the new Constitution.

The meeting then adjourned.

NATHANIEL T. KIDDER, *Secretary.*

BUSINESS MEETING.

SATURDAY, July 5, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were forty members present.

President Hadwen read an invitation to this Society, from the Massachusetts State Board of Agriculture, to attend its fiftieth anniversary, which is to be observed at Horticultural Hall, Tuesday, July 22, 1902.

William C. Strong offered the following memorial of the late Secretary, Robert Manning:

IN MEMORY OF ROBERT MANNING.

Suddenly and without warning on the 17th of February, 1902, Robert Manning disappeared from us; ceased from his mortal and passed into the eternal life.

His membership with us dated from the year 1848, thus giving him fifty-four years of active service, a record which slightly exceeds that of any other member.

Still more significant is the fact that during this time he has been closely identified with the affairs of the Society, and of late years has given active and continuous service.

It was natural that the son of Robert Manning of Salem, the man who established a pomological garden and nursery in the year 1823, six years before the incorporation of this Society, and who was in advance of any other man in the country in the importation and introduction of new fruits, should inherit his father's love for the products of the garden.

Of course he became familiar with the different varieties of fruits and flowers in his early boyhood, and it is probably true that for years past he has been our best authority in identifying fruits.

His service in this direction has been of great value to our members and to the public.

Since the year 1876 he has been continuously chosen Secretary of the Society; and to this office has been joined the duty of editing the Transactions and also the duties of Librarian.

In the year 1878 he completed the History of the Society, a work which reflects equal credit upon the Society and upon the author. Indeed, the book will remain as a standard authority in the early introduction of horticulture into this country, and a comprehensive history of its progress up to the date of its publication.

In all this work of editing in these many years we have reason to hold in high regard the good taste, the carefulness, and the ability with which the work has been done.

Having been engaged in this daily work for the past twenty-six years, Mr. Manning came to be known as the most conspicuous personage of the Society, not alone by the members, but also by pomologists throughout the country, and by all who sought aid from our valuable library.

His knowledge in all departments was sure to be helpful. With modest and quiet dignity and intelligence, he so met his various duties as to contribute largely to the credit and usefulness of the Society.

It has been fortunate for the Society to have enjoyed the services of such a man, so pure and critical in his tastes, so faithful and conscientious in his work, so discerning of its best interests for so many years. Well may his memory be held in enduring regard.

It is therefore voted that this testimonial be entered upon the records of the Society and that a copy thereof be sent to the family of the deceased.

At the conclusion of his address Mr. Strong moved that it be entered upon the records of the Society and that a copy be forwarded to the family of Mr. Manning.

Benjamin P. Ware in seconding this motion said, that he had been on terms of intimacy with Mr. Manning for many years, and expressed his approbation of the testimony that had been presented as to the value of his long service in this Society. The memorial was then adopted.

President Hadwen, for the Executive Committee, reported the resignation of Nathaniel T. Kidder as Secretary and Librarian of the Society, and the appointment of William P. Rich to the office.

He also offered the following recommendation which was adopted: That an oil painting of the late Secretary, Robert Manning, be obtained at an expense not exceeding one hundred dollars.

Under the head of deferred and new business, William H. Spooner offered the following motion:

Voted: That a committee of seven members of the Massachusetts Horticultural Society be appointed by the President to revise and amend the Constitution and By-Laws now governing said Society, the object of said revision to be the better ordering and transaction of said Society's business affairs, and harmonizing the conflicting views of the members, with power to expend such sums of money for counsel fees, printing and distributing its report, and other contingent expenses as may be found advisable by said committee.

After having been seconded by Edward B. Wilder, the motion was re-stated by the President.

William H. Spooner then read a letter from Arthur D. Hill representing several members of the Society who were unable to be present at the meeting, and stating that he was "authorized to say on their behalf, that they cordially agree in the desirability of the suggested committee, and unite with me in hoping that by this means a plan can be adopted which will be satisfactory to the whole Society."

The motion was then unanimously adopted and the President appointed as the committee:

Henry P. Walcott,
Warren W. Rawson,
John K. M. L. Farquhar,
Edwin H. Jose,
C. Minot Weld,
Richard M. Saltonstall,
William H. Spooner.

The Secretary read letters from Messrs. William E. Endicott and G. W. Humphrey offering their resignations as members of the Library Committee. On motion of Mr. Strong it was voted that the resignations of the two gentlemen be accepted and that the deep regret of the Society be conveyed to them.

On motion of Mr. Strong it was voted that the remaining members of the Library Committee be empowered to fill the vacancies.

The President offered the following names for the Committee on School Gardens and Children's Herbariums:

Henry L. Clapp, *Chairman*,
William E. C. Rich, *Secretary*,
Mrs. H. L. T. Wolcott,
Miss Katharine W. Huston,
Charles W. Jenks,
Henry S. Adams,
William P. Rich.

On motion of Mr. Strong they were elected.

Mr. Spooner moved, and it was voted, that the Committee on Flowers have power to fill the vacancy on its committee caused by the death of James Comley.

Charles W. Jenks, Chairman of the Committee on Native Plants, reported that he found it difficult to secure members to serve on that committee. On motion of Mr. Spooner, Mr. Jenks was empowered to fill the vacancies.

A communication from Joseph H. Woodford, Chairman of the Committee of Arrangements, addressed to the Executive Committee was read by the Secretary.

It called attention to the lack of seating accommodations in the Exhibition Hall, and offered as a remedy the suggestions made in the last report of the Committee of Arrangements. As this report was not accessible at the time, Mr. Strong moved that the communication of Mr. Woodford be referred back to the Executive Committee.

Thomas Harrison moved an amendment, that the committee prepare a plan of the improvements it desires to have made.

The amendment was accepted and it was then voted to refer the communication back to the Executive Committee.

The Committee of Arrangements also announced that it had decided to move forward one week all the exhibitions scheduled for July and August and, on motion of Mr. Strong, it was voted that the matter be referred back to the committee with full powers to act.

On motion of Mr. Spooner it was voted that the portrait of the late J. D. W. French, which has been presented to the Society by his family, be accepted, and that the thanks of the Society be extended to the donors.

Action was taken on the death of Messrs. H. H. Hunnewell and James Comley. On motion of Mr. Strong it was voted to request Benjamin C. Clark of the Executive Committee to prepare a memorial of the late Mr. Hunnewell and, on motion of Mr. Harrison, it was voted that Patrick Norton be requested to present a memorial of the late Mr. Comley.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

Paul R. Blackmur of Quincy,
John W. Duncan of West Roxbury,
Herbert H. Dyer of Cambridge,
Lucius H. Foster of Dorchester,
Miss Ella F. Hildreth of Lowell,
Allen Hubbard of Newton Centre,
Ellerton James of Nahant,
Mrs. Olivia B. James of Nahant,
N. W. T. Knott of Waban,
E. L. Lewis of Taunton,
Miss Amy Lowell of Brookline,
David Lumsden of Jamaica Plain,
Edward MacMulkin of Boston,
George Melvin of South Framingham,
Alexander Montgomery, Jr. of Natick,
James H. Morton of Boston,
Edward Powell of Taunton,
John Pritchard of Newtonville,

William A. Prosser of Medford,
Albert H. Roffe of Newton Centre,
Charles Sprague Sargent, Jr. of Brookline,
Richard Clipston Sturgis of Boston,
Edward J. Welch of Dorchester,
Ezra H. Wheeler of Dorchester,
George William Wheelwright of Jamaica Plain.

Communications were read as follows :—

From the Eastern New York Horticultural Society inclosing the program of its annual meeting and stating it would be pleased to have the presence on that occasion of delegates from this Society. On motion of Mr. Spooner it was voted that the Committee on Fruits be empowered to name such delegates.

From the Horticultural Society of New York requesting this Society to name delegates to the International Plant Breeding Conference to be held in New York City, September 30, October 1 and 2, 1902. On motion of Mr. Wilder it was voted to refer the subject to the Executive Committee.

Mr. Spooner moved and it was voted, that when this meeting adjourns it be to August 2, 1902. He also stated that at the January meeting action was taken regarding the disposal of the three granite statues of the old hall. They are at present stored in the yard of the Boston Storage Warehouse Company at an expense of sixty dollars a year. An offer of one hundred dollars has been received for them. Benjamin P. Ware arose and said that he would give one hundred and fifty dollars for them.

Mr. Spooner moved and it was voted, that the matter be referred back to the committee having it in charge.

The meeting then adjourned.

William P. Rich, *Secretary.*

BUSINESS MEETING.

SATURDAY, August 2, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty-five members present.

The Library Committee reported the appointment of Charles W. Jenks and T. Otis Fuller, to fill the vacancies caused by the resignations of Messrs. Endicott and Humphrey.

The Secretary reported the death of Daniel T. Curtis, who was for many years an active member of this Society.

Remarks concerning Mr. Curtis were made by Jacob W. Manning, Thomas Harrison, and the Secretary. It was voted that these three members be appointed a committee to prepare a memorial of Mr. Curtis.

The President appointed the following named members a committee to nominate candidates for Officers and Standing Committees for the ensuing year:

WILLIAM H. SPOONER, *Chairman*,

ARTHUR H. FEWKES,	BENJAMIN C. CLARK,
E. W. WOOD,	AARON LOW,
J. WOODWARD MANNING,	PATRICK NORTON.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

HAROLD J. COOLIDGE of Boston,
ARTHUR E. DAVIS of Wellesley,
MRS. ARTHUR E. DAVIS of Wellesley,
MRS. ROBERT C. HOOPER of Boston,
G. D. LOW of Boston,
E. PREBLE MOTLEY of Boston,
MRS. ELLEN R. PICKMAN of Boston.

Adjourned to Saturday, September 6.

WILLIAM P. RICH, *Secretary*.

BUSINESS MEETING.

SATURDAY, September 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided, and there were twenty members present.

Patrick Norton offered the following memorial of the late James Comley, which was read by the Secretary.

IN MEMORY OF JAMES COMLEY.

James Comley, the subject of this sketch, was born at Derry Hill, England, May 29, 1835. His father's freehold adjoined the estate of the Marquis of Landsdowne in Bowood.

In his early childhood he became very fond of horticulture, so much so that he was apprenticed for six years to learn the profession of gardening in all its branches. But at the end of five years he had become so proficient, under the instructions he had received at the Marquis of Landsdowne's establishment, that he was allowed to graduate a fully competent gardener.

Shortly after this he came to America, and becoming acquainted with Mr. Evers, a copartnership was formed under the name of Evers & Comley, as flower merchants and decorators. They had the honor of decorating the Revere House when the Prince of Wales was there, also the Boston Theatre, on the occasion of the grand ball given in honor of the Prince, now King Edward VII of England.

After remaining in business in Boston for several years, he removed to Worcester, where he devoted himself to the general florist's business for three years and then returned to Boston.

About this time he became acquainted with the late Francis B. Hayes. This was in 1870 and Mr. Comley was in Mr. Hayes' employ for many years after.

In the year 1892 Mr. Comley took a trip to Japan and on his return brought with him many rare plants and seeds from that interesting country.

He has been also very fortunate in producing some fine seedling roses, rhododendrons, and other plants, which added materially to his reputation as an enthusiastic horticulturist.

Mr. Comley was a large exhibitor at the shows of the Massachusetts Horticultural Society and his exhibits of rare and curious flowers and plants added very materially to the success of the exhibitions.

Mr. Comley was a man one could depend upon, for his word was as good as his bond. He was genial in his intercourse with mankind and generally beloved by all who knew him.

His last exhibition before the Massachusetts Horticultural Society was at the Chrysanthemum Show in the fall of 1901, when he was awarded a silver medal.

While busily engaged in the vocation he loved, apparently in good health, on February 1, 1902, he suddenly expired, deeply regretted by all who knew him. *Requiescat in pace.*

PATRICK NORTON.

On motion of William H. Spooner, it was voted that the memorial be accepted and referred to the Committee on Publication.

The Secretary, as Chairman of the Committee appointed to present a memorial of the late Daniel T. Curtis, reported as follows :

IN MEMORY OF DANIEL T. CURTIS.

Daniel T. Curtis was born at Cambridge, Massachusetts, January, 1815, and died at Dorchester, July 26, 1902, at the ripe age of eighty-seven years and six months.

He was elected a member of the Massachusetts Horticultural Society in 1849 and for a period of thirty years following was actively engaged in its work. He was for eight years Chairman of the Committee on Vegetables, in each of which he rendered a full and faithful report.

He was also associated at various times, until 1878, with the Committees of Arrangements, Library, and Fruits, and was one of the committee of ten appointed to make arrangements for the laying of the corner stone of the Tremont Street Horticultural Building, August 18, 1864.

In all these years his interest in the Society was manifested by his frequent contributions to our exhibitions of plants, flowers, and vegetables, as well as by the great amount of work which his connection with the several committees mentioned must have entailed.

He was engaged in the seed and garden supply business in Boston for many years and was for a long period associated with Mr. E. W. Cobb of Newton, under the firm name of Curtis & Cobb, finally going out of business in 1878.

After a residence of many years in Boston, he lived for a time at Sharon, then at Medford, and the closing years of his long life were spent at Dorchester where he died.

He married about the year 1850, Mrs. Sarah Dupee of Boston, who has been several years deceased, leaving no issue by him.

His parents have long since departed and a large family of brothers and sisters have also all passed away in advance of him, and thus he leaves no near relatives excepting nephews and nieces.

To Mr. Cobb, his business partner for twenty-three years, your committee is indebted for much of the material of this sketch of Mr. Curtis' life.

Mr. Cobb testifies to the character and worth of his old friend and associate in the following tribute to his memory :

"He was the most genial of men, unselfish to a fault, nothing apparently giving him more pleasure than to be able to bestow a favor upon an acquaintance, making friends easily and always popular with those with whom he came in business contact. He had also to a remarkable degree the confidence and esteem of very many of the older, prominent citizens of Boston, and I may say also of those of many other sections of New England, in every walk of life, who were numbered among his business patrons."

By reason of the infirmities of advancing age and the fact that he had outlived nearly all of his former associates, he had long since passed from the stage of active work, and now that his life's record is closed, we offer this tribute to the memory of one of the great company of earnest men, through whose interested labors in the past, our Society has attained its present high position.

WILLIAM P. RICH,
JACOB W. MANNING, } *Committee.*
THOMAS HARRISON.

On motion of Mr. Harrison it was voted that the memorial be accepted and referred to the Committee on Publication.

William H. Spooner, Chairman of the Nominating Committee, reported a printed list of candidates for Officers and Standing Committees for the year 1903.

Benjamin P. Ware moved that the report of the Nominating Committee be accepted and his motion was seconded by Mrs. E. M. Gill.

John K. M. L. Farquhar suggested that action on the report be delayed until an expression of opinion regarding it could be had from the new committee on the revision of the Constitution.

He thought that fewer members on some of the Standing Committees would be desirable, and that better results would be obtained from a small committee of three experts, who should receive a more liberal compensation for their services than is at present paid. He also stated that another list of candidates might be presented and, if so, it would be with the idea of promoting the best interests of the Society.

Mr. Ware, in reply, remarked that we are acting under the present Constitution and he saw no other way for the committee to act except in accordance with it.

The President then stated the motion of Mr. Ware, which was that the report of the Nominating Committee be a pted, and it was so voted.

On motion of Mrs. H. L. T. Wolcott it was voted, that the Nominating Committee be continued and have power to fill any vacancies that may occur.

A communication was read announcing the death of George W. Willis of Chelsea, and the Secretary offered the following resolution which was adopted:

The Massachusetts Horticultural Society learns with deep regret of the death on August 26, of George W. Willis, for thirty-four years a valued member of this Society, and we hereby extend to his family the expression of our appreciation of his interest in our work, and also our sincere sympathy in the loss they have sustained.

A letter from Richard C. Manning of Salem was read, acknowledging the receipt of a copy of the memorial of the late Secretary, Robert Manning, and thanking the author of the memorial and the members of the Society for their grateful and considerate action in testimony of their value of the services and their respect and regard for the character of our brother, the late Secretary.

The President spoke on the subject of the disposition of the three granite statues of the old building and, on motion of William H. Spooner, it was voted that the committee to which the matter was referred be discharged and the subject referred to the Executive Committee with power to act.

The meeting was then dissolved.

William P. Rich, *Secretary.*

BUSINESS MEETING.

Saturday, October 4, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today, it being the Annual Meeting for the choice of Officers and Standing Committees for the ensuing year. President Hadwen presided and there were about forty members in attendance.

Horatio Hollis Hunnewell.

Courtesy of "Our Town", Wellesley, Mass.

William H. Spooner moved, that, as the Nominating Committee had no further changes to make in the list of nominations reported in the printed ballot, its report be accepted and the Committee discharged, and the motion was carried.

The Executive Committee reported that the Treasurer of the Society had received $800 from the Executors of the will of Benjamin H. Pierce of Watertown, the principal to be kept intact, the income to be used for the introduction of new fruits.

On motion of Mr. Spooner it was voted that the bequest be accepted.

On motion of William C. Strong it was voted to extend an invitation to the American Pomological Society to hold its next Session in the building of the Massachusetts Horticultural Society, in September, 1903, and to offer such use of the Halls of the Society as may be necessary.

The Executive Committee also reported a recommendation for the appropriation of one hundred and fifty dollars for the Library Committee, for the purchase of two card-catalogue cases with the necessary accessories, and on motion of Benjamin C. Clark, the recommendation was adopted.

On motion of Mr. Clark it was voted that a committee of three be appointed with full power to procure a portrait of the late H. Hollis Hunnewell. The President appointed as the committee, Benjamin C. Clark, William C. Strong, and William H. Spooner.

Mr. Clark presented and read the following memorial of the late H. H. Hunnewell:

HORATIO HOLLIS HUNNEWELL,

Born July 27, 1810.

Died May 20, 1902.

By BENJAMIN C. CLARK.

It is a pleasant custom of our Society that however eloquent and appreciative may be the eulogies of our members elsewhere, we reserve for the pages of our own record the memorial tribute, however humble, of those

who have given marked evidence of their interest in the aims and objects for the promotion of which our organization has existed for nearly three-quarters of a century.

It is not often that we have the opportunity to commemorate the life and services of a man like Mr. Hunnewell, of whom it is not too much to say that we have never lost a member who has left our State as well as our Society under greater obligations. In thinking of him one is reminded of what is told us of Solomon, that "God gave him wisdom and understanding exceeding much and largeness of heart, even as the sand that is on the sea-shore." "He spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall." And in the gift of wisdom Mr Hunnewell found that "length of days was in her right hand and in her left hand riches and honor."

Horatio Hollis Hunnewell was born in Watertown, July 27, 1810. His father, Walter Hunnewell, a graduate of Harvard, was a physician and practised medicine in Watertown for a period of sixty years. Dr. Hunnewell married Miss Susanna Cooke, of Watertown, and was the seventh generation from Roger Hunnewell who came from England to this country about the year 1640. Mr. H. H. Hunnewell, the subject of this sketch, received an excellent education in the schools of Watertown and later in France, and in 1893 Harvard University conferred upon him the honorary degree of A. M.

At the age of fifteen years, Mr. Hunnewell went to Paris and ten years later became a partner in the banking house of Welles & Co., a firm well known to all American travelers. In the same year he married Isabelle Pratt Welles, daughter of the Hon. John Welles, of Boston, remaining in Paris until his return to the United States when he established the house of H. H. Hunnewell & Sons, in Boston. In passing we note from various sources the great interest displayed by Mr. Hunnewell's father-in-law in farming matters. His reports on Orchard and Forest Trees and Grasses, on Milch Cows, Heifers, etc., on Woodland and Forest Trees, and also on Asparagus, on experiments, discoveries and inventions, all show him to have been a man of enlarged views. Mr. Welles was one of the earliest members of our Society, being a subscriber before its organization in 1829, continuing his membership until his death in 1855.

To return to Mr. Hunnewell. It is a singular fact that until he was over forty years of age he never manifested the taste for arboriculture and horticulture in the direction in which he became so proficient. Although taking an active part in business, being largely interested in Western railroads and a director in many financial institutions, he always found time to devote to his favorite pursuits and he was never happier than when he was extending his generous hospitality to his many visitors. His benefactions were numberless. The gifts of a town hall, library, and park to the town of Wellesley were among them. Perhaps one of the best evidences of his kindness of heart was his habit, as stated by the Chairman of the Board of

Selectmen, when leaving for his winter home in Boston, of saying to the Town Clerk, "Be sure and do not allow any one to suffer during cold weather; send them whatever they need and I will pay the bill." *Ex uno disce omnes.*

No one who was present will ever forget the twenty-third of May, the day of Mr. Hunnewell's funeral. The simple service, the flags at half-mast, the places of business all closed, testified to the universal respect for him who had gone from our presence and entered into the higher life through "the portal we call death," after nearly ninety-two years which, to use his own language, "he had been permitted to pass by the love of the Lord, his Creator, in this fair land." As one gazed at the solitary oak which, with the exception of the pines, was the only tree upon the land when Mr. Hunnewell commenced his labors at Wellesley, he could realize the force of the expression of "the wilderness blossoming as the rose;" every tree and every blossom seemed to testify of his taste and care.

No man could have been a greater benefactor than was Mr. Hunnewell to our Society. His fund established for annual prizes, his contributions to our exhibitions, his personal labors on our committees, all will cause his name and memory to be held in grateful recognition for many a long year to come. In closing, I venture to borrow these beautiful lines from "Our Town" for July, 1902, a memorial number of a monthly magazine printed at Wellesley.

H. H. H.

Each year, when sun and shower and lengthening days
  Brought back to earth her sweetness and perfume,
A gracious presence trod our quiet ways
  And joyed in all their loveliness and bloom.

A grave, observant man: whose gaze serene
  Looked out upon the world and found it good.
The faithful steward of a Power unseen
  For wide and wise beneficence he stood.

To lesser things he gave a thoughtful care;
  The humblest need or sorrow touched his heart.
He made the waste a garden but to share
  With friend and stranger all its perfect art.

Life gave him generous gifts in ample store
  Of all the things that men do greatly prize;
Health, wealth, the joys of home, the mystic lore
  Of tree and flower unveiled before his reverent eyes.

Blessing and blest he lived. The happy years
  Slipped softly into shadow, and their end
Was peace. For him all joy, for us the tears.
  Our world has lost a helper and a friend.

— A. C. W.

On motion of Mr. Spooner it was voted that the memorial be adopted and referred to the Committee on Publication and that a copy be sent to the family of Mr. Hunnewell.

On motion of Mr. Clark it was voted that the polls at the annual election be kept open for two hours and, on motion of Mr. Strong, it was voted that the polls be opened at 11 : 30 A. M. and closed at 1 : 30 P. M.

The President appointed Aaron Low, E. W. Wood, and Edwin A. Hall a committee to take charge of the check list, and to receive, assort, and count the ballots.

The following named persons were elected to membership in the Society :

Mrs. Henry L. Higginson of Boston,
Frank H. Evans of Malden,
F. L. Oakes of Newton,
Charles L. Hovey of Waban,
George B. Leighton of Monadnock, N. H., and St. Louis, Mo.

On motion of Mr. Spooner it was voted that when this meeting adjourns it be to the first Saturday in November.

The following communications were read by the Secretary:

From Mrs. R. A. Martin of Chelsea, acknowledging the receipt of the resolution of the Society respecting the death of her father, George W. Willis.

From Henry John Elwes, F. R. S., of Cheltenham, England, requesting permission to republish, in the Journal of the English Arboricultural Society, a Lecture on the Propagation of Trees, by Jackson Dawson, published in the Transactions for 1885, and also informing the Society that he was engaged in collecting material for a large work on the trees of Great Britain. He solicited the interest of the Society in this undertaking.

On motion of Benjamin P. Ware it was voted that the request of Mr. Elwes be granted.

The death of Lamont G. Burnham of Essex was announced and, on motion of Mr. Low, it was voted that a committee be

appointed to prepare the customary record of Mr. Burnham's life. The President appointed as that committee Aaron Low, Benjamin P. Ware, and Henry G. Jordan.

President Hadwen called the attention of the members to the portrait of the late Robert Manning, which had been placed in the Library.

The President being obliged to leave called Vice-President Ware to preside during the rest of the meeting, and at a few minutes after half-past one o'clock the committee on the voting lists reported sixty ballots cast, and that the list of candidates reported by the Nominating Committee had been elected.

The result of the election was also stated by the President *pro tempore*, who declared the candidates to be the duly elected Officers and Standing Committees for the year 1903.

Adjourned to Saturday, November 1.

WILLIAM P. RICH, *Secretary*.

BUSINESS MEETING.

SATURDAY, November 1, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were fifteen members present.

The Executive Committee reported a recommendation that the following amounts be appropriated for prizes and gratuities for the ensuing year:

For	Plants	$1,500.00
"	Flowers	1,875.00
"	Native Plants	125.00
"	Fruits	1,275.00
"	Vegetables	900.00
"	Gardens and Greenhouses	375.00
"	School Gardens	75.00

These amounts are twenty-five per cent less than those appropriated for the year 1902.

On motion of William H. Spooner it was voted that the consideration of the report of the Executive Committee be postponed to the next meeting of the Society.

Thomas Harrison spoke of the work of the Committee on Lectures and Publication and thought that the Chairman should receive compensation for his services. He moved that the Chairman of the Committee on Lectures and Publication be paid one hundred dollars annually, and the other members one dollar a day, for such time as they devoted to the work of the Committee.

William C. Strong offered some remarks on the motion to pay salaries to the Committee on Lectures and Publication. He thought it an unfortunate time to bring up the subject as the Society was facing a deficit of some $4,000 a year.

The motion was not seconded.

The following named persons were elected to membership in the Society:

Arthur Nixon of Taunton,
Chatterton Warburton of Fall River,
George F. Fabyan of Brookline,
Edgar Howard Doane of Wenham,
Oscar Hosmer of Wenham,
Alfred Presson of Gloucester,
Richard D. Kimball of Waban.

A communication from Francis H. Appleton was received, containing a check for $123.61, the proceeds of the Opening Flower Show of 1901. It was requested that the amount be expended for library purposes.

On motion of Mr. Harrison it was voted to accept the communication and check of Mr. Appleton and to devote the proceeds as indicated.

A communication was received from the Massachusetts Fish and Game Protective Association requesting the Society to send one or more delegates to a convention to be held in Boston on November 13.

On motion of Edwin A. Hall it was voted to accept the communication and to appoint two members as a committee to represent the Society on that occasion. The President appointed as the committee, Benjamin C. Clark and Charles E. Richardson.

Adjourned to the first Saturday in December.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, December 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty members present.

The Secretary read the Annual Report of the Secretary and Librarian. J. Woodward Manning, Chairman, read the Annual Report of the Committee on Flowers.

E. W. Wood, Chairman, read the Annual Report of the Committee on Fruits.

Warren H. Heustis, Chairman, read the Annual Report of the Committee on Vegetables.

Arthur H. Fewkes, Chairman, read the Annual Report of the Committee on Plants.

Patrick Norton, Chairman, read the Annual Report of the Committee on Gardens.

William H. Elliott, Chairman of the Committee on Establishing Prizes, presented the proposed Schedule for 1903.

William H. Spooner, Delegate to the Massachusetts State Board of Agriculture, made his Annual Report.

These reports were separately accepted and referred to the Committee on Publication.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society.

Emil Johansson of Brookline,
Charles E. Hellier of Boston,
Herbert W. Rawson of Arlington.

The Secretary reported the death of Henry Probasco and offered the following motion which was voted:

The Massachusetts Horticultural Society learns with deep regret of the death on October 26, of Henry Probasco of Cincinnati, Ohio, for eleven years a Corresponding Member of this Society, and we hereby express to his family our appreciation of his interest in this Society and our sincere sympathy in their bereavement.

On motion of Patrick Norton the thanks of the Society were voted to Edward Hatch, Esq., for the special prizes offered by him for fruit-houses.

On motion of J. Woodward Manning it was voted to express the thanks of the Society to Mrs. J. Montgomery Sears, Messrs. Kelway and Sons, and The Society of American Florists for the various prizes offered by them.

On motion of William H. Spooner it was voted that the report of the Executive Committee referring to the appropriations for prizes and gratuities for 1903 be laid upon the table for final action at the January Meeting.

The meeting was then dissolved.

William P. Rich, *Secretary.*

ROBERT MANNING.

BY WILLIAM P. RICH.

To record the life work of Robert Manning would be to recite the history of the Massachusetts Horticultural Society for nearly the whole period of its existence.

His father, of the same name, was one of the founders of the Society and was present and elected a vice-president at its first meeting for organization, March 17, 1829.

The senior Robert Manning was a pioneer in this country in the extensive cultivation of fruit trees for commercial purposes, and began as early as 1817 the establishment of an orchard and nursery at Salem, Massachusetts, for the purpose of growing a large number of fruit trees, of various kinds, in order to test by cultivation, their adaptability and hardiness for the New England climate. He procured and distributed many new varieties of fruits from Europe and got together the largest collection of fruit trees then known in the United States, having, it is said, one thousand varieties of pears alone. For many years he was the leading authority in the country on the cultivation and nomenclature of fruits.

His little book on Fruit Trees, published in 1838, of which several editions are in the library of the Society, was the precursor of the long line of such publications continuing to the present day.

Into this pomological garden at Salem, the son Robert was born July 6, 1827, and in the midst of these surroundings was his whole life passed.

It is related that before he could plainly pronounce the long name of the Society he would say to his father, when a new or interesting variety was under discussion in the family circle, "Take it to the horticultural exhibition."

In his early years he was frequently called upon to take a basket of fruit to the exhibitions at Boston and so he felt, as he often expressed it in later years, that he was "born into the Horticultural Society."

As a boy he was of a somewhat reserved nature, quiet and studious, not especially interested in sports, but fond of walking, that recreation of observant and thoughtful minds. He was ingenious in mechanical work, interested in general literature, especially history, biography, and poetry, and a youth of high moral standards; qualities of character similar to those of his renowned cousin, Nathaniel Hawthorne.

At the age of eleven years he was graduated from the North Salem Grammar School and in 1838 entered the English High School of Salem, completing the course in 1841.

The quality of the young man and his record at that time are shown by the fact of his being engaged for the ensuing term as an instructor in the school.

The death of his father the following year, 1842, brought him face to face with his life's work and to that end he had been trained and instructed by his father.

Although a boy of fifteen, he and his brother Richard at once took up the work of the pomological garden and carried it on for many years, and the name Robert Manning which had been from the founding of the Society a familiar one upon its records was to be continued for a further period of nearly sixty years.

The first exhibition of fruits by Robert and Richard, after their father's death, is recorded in the Transactions under date of September 13, 1843, when they exhibited a large number of varieties of pears, apples, peaches, and plums.

The report of the fruit committee on the exhibition of September 18, 1844, contains the following paragraph:

"We are glad to see the sons of the lamented Manning so much engaged in the favorite pursuit of their father. They have our best wishes that their efforts may be crowned with success. Notwithstanding their soil is not rich or calculated to produce large specimens, yet their collection of pears obtained the second prize for the greatest number of kinds and the best grown."

At the exhibition held September 16, 1845, Robert Manning of Salem contributed two hundred and forty varieties of pears, all named. At the Nineteenth Annual Exhibition of the Society held September 22, 1847, he showed two hundred and fifty-five varieties of pears, and on September 2, 1848, two hundred and sixty

sorts of pears and one hundred and eighteen varieties of apples. In 1848 he became a life member of the Society and was appointed one of the standing committee on fruits, serving in this capacity at different times for many years.

During the fifteen or more years following we find him occupied with his pomological garden, displaying its products at the various exhibitions of the Society, and making an occasional visit to the conventions of the American Pomological Society with his friend, Marshall P. Wilder.

He had an intimate acquaintance with the leading pomologists of the country and attended the first meeting of the American Pomological Society in 1849, on which occasion, although but twenty-two years old, he was appointed on a committee to prepare a list of fruits for general cultivation of which committee Andrew J. Downing was chairman.

In 1869 he was appointed editor of Tilton's Journal of Horticulture and contributed to its pages many articles on fruits and plants. His connection with this magazine was terminated by its discontinuance in 1871.

In 1874 he was engaged to edit the Transactions of the Massachusetts Horticultural Society, the office of editor being then established under the presidency of William C. Strong.

He served in this position the following year when the office of editor being then discontinued, he was elected Secretary of the Society, his first annual report being that for 1876. From this date until his death he was prominently identified with and actively employed in the conduct of the Society's affairs.

In 1880 under his supervision and editorship was brought to a completion the "History of the Massachusetts Horticultural Society," concerning which the committee in charge of the work remark in their preface, " The Editor, Robert Manning, has brought to the work the utmost faithfulness and constant endeavor to secure strict accuracy. The investigation of records, often obscure, has required much time and labor and unwearied application, and to him is due the credit of bringing the history to its present form." Here it may be stated that all of his editorial and clerical work was characterized by much literary ability, good taste, and above all, by painstaking effort in verifying references and substantiating statements of facts.

He had a most retentive memory and was from his boyhood diligent in storing away in his mind interesting facts and poems. He was especially fond of poetry and could repeat the whole of Scott's Lady of the Lake, the greater part of the Lay of the Last Minstrel, Marmion, and many of the poems of Whittier, Bryant, and Longfellow, besides those of other authors.

In later years this practice, with his wide reading of standard literature, especially in history, biography, and travel had given him a mine of information from which he was wont to draw as occasion required. He had also a keen appreciation of the humorous side of life, and took delight in the hearing or relating of a good story.

The great library of the Society to which his father contributed its first volumes was developed under his care and the generous interest of its friends until it has become one of the notable horticultural libraries of the world.

He was familiar with every book and guarded them with almost jealous solicitude, yet always ready and helpful to aid the inquiring student in searching out the treasures they contain.

Although his special interest was in pomology, he was well versed in other departments of horticulture, to which, with his familiarity and acquaintance with horticulturists and horticultural literature, he brought the ripe fruitage of his own long and practical experience.

The value of his pomological work has been recognized in the following awards of medals which have been bestowed upon him.

1845. Silver Medal from American Institute, N. Y., to Robert Manning for one hundred choice varieties of autumn and winter pears from his own grounds.

1855. Silver Medal from Massachusetts Horticultural Society to Robert Manning for collection of pears.

1876. Bronze Medal for a collection of fruits exhibited at the U. S. Centennial, Philadelphia.

1881. Silver Medal for eminent services in Pomology, from the American Pomological Society.

1900. Bronze Medal for work in Pomology, Paris Exposition.

In his home life he was contented in the companionship of his sisters, and his leisure hours were occupied with his garden and his trees. Thus the years glided serenely by until the last Saturday night came that called him from his accustomed duties.

Early on the following Monday morning, February 17, 1902, the final summons came suddenly, and in the home where he was born he passed away at the age of seventy-four years and seven months.

It is fitting that upon the pages of these Transactions, which for twenty-eight years have borne witness to his faithful service, there should be placed the tribute of appreciative remembrance.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1902.

By ARTHUR H. FEWKES, Chairman.

Your committee is pleased to report continued interest in this department notwithstanding predictions to the contrary. The past year has been an experimental one in some respects, as it was the first year during which exhibitions were held in our new hall. The discouraging conditions under which the exhibits were obliged to be made seem not to have deterred exhibitors from making fine displays, although many complaints have been made of the inharmonious effects produced by the unfortunate color of the walls, against which many of the plants were obliged to be staged.

The year has been fruitful in new introductions, many of them of the exhibitors' own productions, and the awards for these show that the year is not behind previous ones in this respect.

It is noticeable also that many of the awards have been made on Saturdays, showing that the exhibitors appreciate the weekly shows, knowing that it provides a chance for them to offer their plants at any time when they may be at their best. It surely would be a great loss to abolish this privilege, not only to the owners of the plants, but to the public also.

At the large exhibitions we have been mostly dependent upon a few old exhibitors for the greater part of the displays made, although there have been several new ones whose plants have been very welcome, if few in number. While this is not wholly desirable it cannot be avoided owing to the limited number of persons who have suitable plants and are willing to place them on exhibition.

As the general features of the various exhibitions are not materially different from year to year, each show will not be taken up separately, but such exhibits as seem to be of unusual interest or which are educational or instructive in their nature will receive attention.

The first exhibit to claim our attention, outside of the regular prizes, was made on Saturday, February 8, by William Thatcher, who made a display of his seedling asparagus, and which he entered in competition for the prizes offered by the Society of American Florists. It seems to be a chance seedling from *Asparagus tenuissimus*, with the same foliage, but of a very dwarf habit, making it particularly valuable for pots and jardinieres if it can be propagated with sufficient ease. This with *Nephrolepis Piersoni*, which we will describe later, were the only ones shown in competition for this prize and we recommend the award of the first prize for the *Nephrolepis* and the second for the *Asparagus*.

On March 1, James Garthley, gardener for H. H. Rogers, Esq., showed a very remarkable variegated plant, *Saxifraga sarmentosa tricolor superba*, which was brought from Scotland by him the previous autumn. It is a very beautiful variegated form of the old strawberry geranium, so-called, the leaves being beautifully marked with white and pink. While it is not an entirely new plant, it has never been shown here before and it was awarded the Society's Silver Medal.

On the same day there was shown before the Society for the first time two other plants of much merit, *Odontoglossum midgleyanum* from H. H. Hunnewell, and a hybrid *Cypripedium* raised by J. E. Rothwell, named Edmund Rothwell, a cross between *Sallierii Hyeanum* and *C. Hookerae*. The Society's Silver Medal and a First Class Certificate of Merit were awarded respectively.

The Pierson Fern.

Courtesy of the F. R. Pierson Company.

By far the most important and remarkable new plant that has been shown before the Society for many years was placed on exhibition at the March Show by the F. R. Pierson Company of Tarrytown, New York, and was shown under the name of *Nephrolepis Piersoni*. It originated with them as a sport from *N. exaltata Bostoniensis* and is very interesting botanically, as well as of great value commercially. Instead of the fronds being simply pinnate, as in the original form, the pinnæ have become divided making the frond twice pinnate. At the same time the power of indefinite extension of the tips of the fronds, a characteristic peculiar to *Nephrolepis*, seems to have been communicated to the pinnæ, thereby making the fronds of great width and beauty in a well developed plant.

There was also exhibited by L. H. Foster a similar variety of the same plant under the name of *Nephrolepis Fosteriana*. There was the same division of the pinnæ, but while this was noticeable only in the sterile fronds of Pierson's variety, it was confined to the fertile ones only in Foster's, thereby producing a much different effect and less beautiful. The Pierson variety was so remarkably distinct and at the same time of so much commercial value, that we considered the plant worthy of the highest award offered by the Society; we therefore awarded it the Gold Medal. The *N. Fosteriana* was awarded a First Class Certificate of Merit.

At this same exhibition there were several other new and interesting plants, never before shown here, and which received special awards. The most prominent among them was a specimen of the finest species of the so-called yellow callas, *Richardia Pentlandii*, shown by the Harvard Botanic Garden. It is a beautiful plant with a flower of a fine clear yellow color. A First Class Certificate of Merit was awarded for this.

The same award was made to Walter P. Winsor for *Coelogyne pandurata*. Although it is not new to cultivation, it is seldom seen, and, as we believe, was never before shown here. This orchid is one of those plants whose flowers attract more by the beautiful combination of colors displayed by them than by their great brilliancy. The individual flowers are of medium size with the sepals and petals all of a very bright green. The lip is of the same green color with a number of velvety black embossings

which produce an effect in color which is very seldom seen in flowers and is as beautiful as it is rare.

Honorable Mention was awarded to R. & J. Farquhar & Company for the new *Schizanthus wiestonensis* and to M. H. Walsh for two very pretty new seedling Rambler roses, Fairy Queen and La Fiemetta.

On April 5, Mr. E. O. Orpet, gardener to E. V. R. Thayer, was awarded the Society's Silver Gilt Medal for his seedling hybrid orchids, *Laelio-Cattleya*, *G. S. Ball*, the result of a cross between *Cattleya Schroederae* and *Laelia cinnabarina*. This cross was made with a view of introducing the brilliant red color of *L. cinnabarina* into the large flowers of the *Cattleya*. The eight plants exhibited illustrated the variation between individuals of identical parentage.

At the May Show, R. & J. Farquhar & Company placed on exhibition their new Rambler rose, named by them the Farquhar Rose. It is a hybrid raised by Jackson Dawson of the Arnold Arboretum, and a cross between *Rosa Wichuraiana* and the Crimson Rambler. It is remarkably free in growth, with bright, shining green leaves, resembling very much the *Wichuraiana*. The flowers are double, somewhat larger than those of the Crimson Rambler, and of a very pleasing shade of salmon-pink. Undoubtedly this is one of the most valuable of this comparatively new class of roses. We considered this well worthy of the Society's Silver Gilt Medal, and we therefore made them this award.

While speaking of this rose another new one, *Dorothy Perkins*, of the rambler class should be mentioned. It was placed on exhibition July 12 by A. T. Story, but the exhibit was too limited to judge correctly of its merits. However, it was sufficient to prove it of great promise and we awarded it Honorable Mention, believing that as the variety develops it will be one of the most valuable of this class. Its seed parent was the same as the Farquhar Rose but of the Hybrid Perpetual variety. Mme. Gabrielle Luizet was used as pollen parent. The flowers are very double, larger than Crimson Rambler, and clear shell-pink in color.

A very fine white variety of *Cattleya Mossiæ*, named *Evelyn Sloane*, was exhibited May 17 by Alfred J. Loveless, gardener to

John Sloane, Esq., of Lenox, Mass. It was a beautiful flower and was awarded the Society's Silver Medal.

Another very fine *Cattleya* which seems never to have been shown here before is *C. majalis*. It was exhibited May 31 by Edward J. Mitton and received much attention. It was awarded the Bronze Medal.

At the Rhododendron Show, June 7, there were several new plants shown which received special awards. Jason S. Bailey showed the new palm, *Kentia Duckamii*, a promising species for which he was awarded Honorable Mention.

Among orchids there were three new ones all of much beauty; one from Oakes Ames and two from J. E. Rothwell. Mr. Ames' plant was *Cypripedium callosum* var. *Sanderiae* for which he received a Silver Medal. J. E. Rothwell showed the hybrid orchid *Laelio-Cattleya* × *Phœbe* var., and *Cypripedium* × *Mars* for which he was awarded a Silver Medal and a First Class Certificate of Merit respectively.

At the Saturday exhibition, July 5, four new plants were shown, the most important from a commercial point of view, at least, being the hybrid *Richardia* raised by Joseph Tailby & Son. It is the result of a cross between *R. albo-maculata* and *Elliottiana*. The plant retains the habit of the seed parent but is of larger growth. The flower is increased in size and shows also the influence of the pollen parent in color, which is changed from white to light yellow. The foliage retains the silvery spots common to both parents, giving the plant a very brilliant effect, particularly when used for bedding out among sub-tropical plants. We consider this one of the most distinct new plants and worthy of the Society's Silver Medal, which was awarded.

The other three new plants were *Cypripediums*, all of great merit, but the one shown by J. E. Rothwell under the name of *Cypripedium* × *Cowleyanum* (*C. Curtisii* × *niveum*), was particularly interesting. This with *Cypripedium Mahleriae* var. *platytaenium* from Henry T. Clinkaberry were awarded Bronze Medals, while *Cypripedium* × *I'Ansonii* (*C. Morganae* × *C. Rothschildianum*), was awarded a First Class Certificate of Merit.

Another fine hybrid *Cypripedium* was shown by Mr. J. E. Rothwell on Saturday, July 12, under the name of Lord Derby (*C.*

Rothschildianum × *superbiens*), for which a First Class Certificate of Merit was awarded.

Still another new plant of unusual merit was shown by Mr. M. H. Walsh on July 26. This was a seedling hydrangea to which he has given the name *Superba*. It is the result of a cross between *H. Otaksa* and *H. cyanoclada*. The plant shown was the original one and was a mass of flowers. It seems to be exceedingly free flowering and the flowers range in color from pink to deep blue, resembling in this respect the colors seen in *H. Cyanoclada*. They are very thick and leathery in texture. This plant is particularly interesting for, so far as we can learn, it is the only instance on record where hydrangeas of this class have been raised from seed, and the fact that this was the result of hand fertilization, makes it of still greater interest. We awarded Mr. Walsh the Society's Silver Gilt Medal for this unique plant.

August 23, Mr. J. E. Rothwell brought in another new seedling orchid, *Laelio-Cattleya* × *Edmund Rothwell* (*C. Amethystoglossa* × *L. cinnabarina*), for which he received Honorable Mention. Although this showed little improvement over its parents it was interesting from the fact that it showed no trace of the bright color of the pollen parent but was much the same color as the seed parent, though lacking the spots seen in that species.

August 30, there was an interesting exhibit of American raised seedling orchids from the collection of E. V. R. Thayer, Esq., of Lancaster, Mass. It consisted of twelve plants representing nine distinct crosses, many of which had special merit. At various times during past years exhibits of individual plants and similar collections from this same source have been made, which with this display, make a record far surpassing all others in this line of work; the hybridization of the more difficult species. In recognition of this original work on the part of the gardener, Mr. E. O. Orpet, and the encouragement afforded this important work by Mr. Thayer, we have awarded the Society's Gold Medal. One plant in this exhibit was awarded a First Class Certificate of Merit, it being new to science, as well as possessing much individual beauty. It is the result of a cross between *Laelia tenebrosa* and *Cattleya Gaskelliana alba*, having been named *Laelio-Cattleya* × *Gladys*. The flower is a pleasing shade of lemon-yellow in color with a lip of lilac-rose and prettily veined.

New Seedling Hydrangea "Superba": M. H. Walsh.

Mr. Orpet describes the other varieties in the collection as follows :—

"*Laelio-Cattleya* × *Proserpine* (*L. Dayana* × *Cattleya velutina*), a variety with delightful perfume and brightly colored flowers, the two plants shown showing considerable variation in coloring.

Cattleya × *Atalanta* (*C. Leopoldii* × *C. gigas Sanderiana*), a handsome plant bearing a seven-flowered spike of inflorescence, each four and one-half inches across, of a beautiful light rose color, with a suffusion through the petals of a deeper shade. This handsome cross promises well for the future, producing so large a number of blossoms when first flowering.

Cattleya × *Patrocinii* (*C. Harrisonæ* × *C. Leopoldii*); this was interesting as proving the origin of a cattleya sent from Brazil as a new species, but its origin being suspected of a hybrid nature, has been proved by crossing in cultivation the two species as above that occur together in a state of nature. It is also a fine acquisition as a garden plant, the bronze of *C. Leopoldii* being suffused with the rose color of the other parent, the whole flower being four inches across, beautifully spotted, nine of them on one spike.

Cattleya × *interglossa* (*C. intermedia* × *C. amethystoglossa*). A plant was shown carrying two five-flowered spikes of lilac-pink flowers with the spotting of *C. intermedia* on the petals and sepals, and the rich amethyst lip of the other parent. It is a useful variety for producing cut flowers, owing to its free flowering properties and vigor.

Laelio-Cattleya × *C. G. Roebling* (*Cattleya Gaskelliana* × *Laelia purpurata*), a stately and handsomely colored hybrid with flowers eight inches in diameter, sweetly scented, combining the fine features of the two parents to a marked degree.

Laelia × *nigrescens* (*L. pumila* × *L. tenebrosa*); this cross was again shown in two distinct forms from that originally exhibited, a characteristic of this combination of parents being a wide variation.

Laelio-Cattleya × *Bletchleyensis* (*Laelia tenebrosa* × *Cattleya gigas Sanderiana*). This plant showed plainly the value of using as parents in crossing the best obtainable forms of species as subjects to work with, the influence of this distinct type of *C.*

gigas being plainly discernible in the finely developed lip and its rich coloring of deep bronze-crimson, and the lighter shade of the same color in sepals and petals.

Laelia × *Amœna* (*L. Dayana* × *L. anceps Stella*). Two plants were included in the exhibit, of widely different coloring, one being remarkable for its deep purple-crimson through the whole flower, while in the other form this rich coloring was present only in the lip, making a pleasing contrast to the lighter rose sepals. It is a plant that shows the *L. anceps* plainly in the growth, but the flower stem is reduced from that of the length of *L. anceps* to a height of about twelve inches, while *Laelia Dayana* leaves its impress plainly in the rich coloring of the lip which also has the raised deep purple lines of *L. Dayana*."

At the Annual Exhibition September 11, several new plants were shown, four of them orchids. The most interesting of these being a hybrid zygopetalum, *Z. Roblingianum* (*Z. costratum* × *Z. Gauthierii*), from Henry T. Clinkaberry of Trenton, N. J., who entered this in competition for the best American seedling orchid other than cypripedium. This won the highest prize awarded, a Silver Medal.

The others, all of which were awarded Honorable Mention, were *Laelia grandis tenebrosa*, *Summitosa*, from Lager & Hurrell of Summit, N. J. *Cypripedium Fairy Queen* and *Laelio-Cattleya C. H. Holmes*; *Lelia purpurata* × *Cattleya Schilleriana*, from J. E. Rothwell. Lager & Hurrell also received a First Class Certificate of Merit for a deep colored variety of *Cattleya Hardyana*.

Honorable Mention was also awarded to Jason S. Bailey for a new variety of *Alocasia Wacriniana*, to W. A. Manda, for a new rose, a hybrid between American Beauty and Jersey Beauty, and to D. F. Roy for a seedling canna, *Mrs. E. S. Converse*.

W. A Manda was awarded a Silver Medal for a fine new form of the California privet, *Ligustrum ovalifolium*. It is beautifully variegated with golden yellow and seems to be well fixed. It should make a valuable addition to the shrubs with golden foliage.

Dracœna lantuginosa was shown by Col. Charles Pfaff and awarded a First Class Certificate Merit. It is a fine plant in the way of *D. indivisa*.

A. F. Estabrook showed a small but well grown plant of the new fern, *Adiantum Charlottæ* for which a First Class Certificate of Merit was awarded. This is one of the most beautiful of the many forms of *A. cuneatum*, much like the variety *gracilimum*, but much stronger and better in habit.

October 4, the Blue Hill Nurseries sent in a new hardy grass, *Arrhenatherum bulbosum variegatum* for which a First Class Certificate of Merit was awarded. It is a very pretty, dwarf grass which should be useful for edgings.

J. E. Rothwell showed a new seedling orchid, *Laelia* × *Oweniana* (*L. Dayana* × *L. xanthina*), for which he received Honorable Mention. He also showed the rare *Cypripedium Sanderianum*, the only true cypripedium with long string-like petals. This is a most difficult subject, but its possibilities for hybridizing purposes are many, and some fine novelties are looked for from this source. We deemed this plant worthy of being awarded the Silver Medal.

There were brought to the Chrysanthemum Show two new orchids, one in competition for the best American raised, seedling orchid. It was *Cattleya* × *Rothwelliæ* (*C. Bowringiana* × *C. Eldorado*) by J. E. Rothwell; this won the third prize, a Bronze Medal. The other was *Cattleya* × *mollis*, shown by James Wheeler. The plant was one of a lot of seedlings raised by E. O. Orpet from *Cattleya Gaskellina* × *C. superba splendens*. It is a beautiful variety and was awarded the Society's Silver Medal.

At various times during the year plants have been exhibited which have shown unusual skill in their cultivation and, although exhibited under the name of the owners, we considered the cultural excellence due to the gardeners who grew them, and have recognized their skill by making cultural awards to them.

The first to be recognized in this way was a plant of *Oncidium Cavendishianum*, on March 8, from Col. Charles Pfaff, and grown by George Melvin, his gardener. The plant was remarkably well grown and showed unusual skill in handling this subject. He was awarded a First Class Certificate of Merit for superior cultivation. He also received the same award for a well-grown plant of *Odontoglossum læve* on July 5.

The most remarkable plant that has come under our notice from a cultural point of view was a magnificent basket of *Dendrobium nobile* exhibited by Mrs. John C. Whitin at the Spring Show on March 19. The plant was entered in competition for specimen plant of orchid and won the first prize, but in addition to this we considered it to be so well grown that much honor is due to William McAllister, the gardener, and we therefore awarded him the Society's Silver Medal for superior cultivation, The plant was conceded to be the finest specimen of the kind ever shown before the Society.

Other awards of this nature were, First Class Certificate of Merit awarded to James Garthley, gardener to H. H. Rogers, on April 5, for *Cypripedium villosum*. On May 3, to J. Lawson, gardener to Edward J. Mitton, for a fine plant of *Brassia verrucosa*, carrying fourteen spikes of bloom. To D. F. Roy, gardener to E. S. Converse, on June 19, for a remarkable plant of *Pteris ensiformis* var., *Victoriæ*, showing well how handsome a plant this fern is capable of making under favorable conditions and proper treatment; and to Emil Johansson for a very finely grown *Cypripedium* × *Frau Ida Brandt* var., exhibited on July 5.

At the Rhododendron Show, June 7, Jason S. Bailey made a fine display of calceolaria, Golden Gem, which attracted much attention. We make mention of this, for the shrubby varieties seem to have been overlooked, as exhibition plants, previous to this. That this should not be so seems very evident from the great beauty of the plants shown by Mr. Bailey.

Some unusual features were introduced at the Annual Exhibition, September 11, one of which was the magnificent display of crotons from E. J. Mitton of Brookline, comprising over fifty varieties, many of which were new. The display occupied a prominent place on the main floor and was greatly admired. It was the most extensive display of these plants ever attempted here, and in consideration of this and the fine condition of the plants we awarded Mr. Mitton the Society's Silver Gilt Medal.

Another feature was the display of Miniature Gardens and Dwarfed Japanese Trees from the Yamanaka Company. The dwarfing process practised by the Japanese gardeners was illustrated by the series of trees ranging from the little, one year old

specimen, to comparatively immense trees of great age. This exhibit formed a striking contrast to the other displays, for on the one hand we had the oriental idea of perfection in the gardener's art and on the other the occidental.

The Chrysanthemum Show brought out some remarkable plants, fully equal to any previously shown. The acme of perfection in trained chrysanthemums seems to have been reached, and we can hope for nothing finer in this style of plants than those exhibited by Jason S. Bailey and Mrs. B. P. Cheney.

We would suggest, however, that as the chrysanthemum lends itself so naturally to decorative effects, that more attention be paid to methods of cultivation which will emphasize this to the best advantage, feeling that the public will be most appreciative of any departure in this direction. We would not encourage this method of culture to the exclusion of the present system, for there is ample room for both, and the skill of the gardener will be taxed to as great an extent to produce the artistically beautiful as it now is to produce the symmetrically beautiful.

Late in November, Mr. Peter Fisher entered with this committee his seedling carnation, *Mrs. Thomas W. Lawson*, in competition for the prospective prize offered by the Society for the best seedling flowering plant. This variety has been under observation for several years and is thoroughly known to us. We can therefore unhesitatingly recommend this plant for the prize as we consider it the most distinct break in carnations that has come to our notice.

PRIZES AND GRATUITIES AWARDED FOR PLANTS.

1902.

January 4.

Primula Sinensis.—Six plants in not less than six-inch pots:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. B. P. Cheney, $2.

Primula Stellata.—Six plants in not less than six-inch pots:
1st, C. H. Souther, $3; 2d, Mrs. B. P. Cheney, $2.

Primula Obconica Hybrids.—Six plants in not less than six-inch pots:
1st, Mrs. B. P. Cheney, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. J. L. Gardner, $2.

February 8.

Freesias.—Six pots or pans:
1st, Col. C. Pfaff, $5.

Gratuities:—

Mrs. J. L. Gardner, *Primula Sinensis alba plena*, $2.
Mrs. B. P. Cheney, Thirteen plants of *Primula obconica*, $6.

SPRING EXHIBITION.

March 19, 20, 21, 22 and 23.

Theodore Lyman Fund.

Indian Azaleas.—Specimen plant, named:
1st, Dr. C. G. Weld, $8.

Begonia Gloire de Lorraine.—Display:
1st, Mrs. B. P. Cheney, $15.

Society's Prizes.

Ericas.—Six, not less than three species:
1st, Dr. C. G. Weld, $6.

Orchid.—Single Plant:
1st, Mrs. J. C. Whitin, *Dendrobium nobile*, $12; 2d, W. P. Winsor, *Dendrobium nobile*, $10; 3d, Mrs. J. L. Gardner, *Phajus grandiflorus*, $6.

Stove or Greenhouse Plants.—Specimen, in bloom, other than Azalea or Orchid:
1st, Mrs. J. L. Gardner, *Acacia heterophylla*, $6; 2d, Dr. C. G. Weld, *Erica melanthera*, $4.

HARD-WOODED GREENHOUSE PLANTS.—Four, in bloom:
1st, Dr. C. G. Weld, $10.

HARDY FLOWERING DECIDUOUS SHRUBS, FORCED.—Four, of four distinct species, named:
1st, Bussey Institution, $8; 2d, Mrs. J. L. Gardner, $5.

HARDY PRIMROSES.—Twelve plants of distinct varieties:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4; 3d, Mrs. J. L. Gardner, $2.

HARDY POLYANTHUSES.—Twelve plants of distinct varieties:
1st, Mrs. J. L. Gardner, $6.

CYCLAMENS.—Ten plants:
1st, Mrs. B. P. Cheney, $15; 2d, C. H. Souther, $12; 3d, Mrs. B. P. Cheney, $10.

Ten plants, in not over seven-inch pots:
1st, G. F. Fabyan, $8; 2d, Mrs. B. P. Cheney, $6; 3d, G. F. Fabyan, $4.

Single plant:
1st, C. H. Souther, $5; 2d, Mrs. B. P. Cheney, $4.

CINERARIAS.—Six varieties:
1st, E. J. Mitton, $10; 2d, Mrs. B. P. Cheney, $8; 3d, Mrs. J. L. Gardner, $6; 4th, Dr. C. G. Weld, $5.

Three varieties:
1st, Mrs B. P. Cheney, $6; 2d, Mrs. B. P. Cheney, $5; 3d, Mrs. J. L. Gardner, $4.

Single plant:
1st, Mrs. J. L. Gardner, $3; 2d, E. J. Mitton, $2; 3d, Mrs. B. P. Cheney, $1.

HYACINTHS.—Twelve named varieties, in pots; one in each pot:
1st, Dr. C. G. Weld, $8; 2d, Bussey Institution, $5; 3d, E. S. Converse, $3.

Six named varieties:
1st, E. S. Converse, $5; 2d, Bussey Institution, $4; 3d, Mrs. J. L. Gardner, $3.

Single named bulb:
1st, Bussey Institution, $2; 2d, Mrs. J. L. Gardner, $1.

Three pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4.

Two pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. J. L. Gardner, $3; 3d, Dr. C. G. Weld, $2.

Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Mrs. J. L. Gardner, $3; 2d, Bussey Institution, $2; 3d, Mrs. J L. Gardner, $1.

TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:
1st, W. S. Ewell & Son, $6; 2d, W. S. Ewell & Son, $4; 3d, Bussey Institution, $2.

Three eight-inch pans, nine bulbs of one variety in each:
1st, E. S. Converse, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

Three ten-inch pans, twelve bulbs of one variety in each:
1st, Dr. C. G. Weld, $5; 2d, E. S. Converse, $4; 3d, W. S. Ewell & Son, $3; 4th, W. S. Ewell & Son, $2.

Polyanthus Narcissus.—Four seven-inch pots, four bulbs in each, distinct varieties:
1st, Dr. C. G. Weld, $4.

Jonquils.—Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $3; 3d, W. S. Ewell & Son, $2.

Narcissuses.—Six eight-inch pans, distinct varieties, single or double:
1st, Dr. C. G. Weld, $6; 2d, W. S. Ewell & Son, $4.

Three eight-inch pans:
1st, W. S. Ewell & Son, $3; 2d, Dr. C. G. Weld, $2.

Lily of the Valley.—Six pots or pans, not exceeding eight inches:
1st, Bussey Institution, $4; 2d, W. S. Ewell & Son, $3; 3d, P. B Bradley, $2.

Crocuses.—Three boxes, each eight by twenty inches, three distinct varieties:
1st, Bussey Institution, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

Ixias.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

Tritonias.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

Roman Hyacinths.—Six eight-inch pans, ten bulbs in a pan:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

General Display of Spring Bulbs and Plants:—All classes:
1st, Bussey Institution, $30; 2d, W. S. Ewell & Son, $20.

Gratuities:—

N. F. Comley, Azalea, $1.
E. E Riley, Hybrid Primulas, $2.
R. & J. Farquhar & Co., Display of Bays, Palms, and Cyclamen, $35.
Harvard Botanic Garden, Display of Cyclamen, *Primula obconica*, *Cœlogyne*, and *Lachenalias*, $25.
J. S. Bailey, Display of Palms, Cinerarias, Cyclamens, etc., $25.
Bussey Institution, Forced Hardy Herbaceous Plants and Shrubs, $10.

MAY 10.

CALCEOLARIAS.—Six varieties, in pots:
1st, Mrs. B. P. Cheney, $10; 2d, G. F. Fabyan, $8; 3d, Mrs. B. P. Cheney, $6.
Single plant:
1st, Mrs. B. P. Cheney, $3; 2d, G. F. Fabyan, $2.

Gratuities:—

J. E. Rothwell, Display of Orchids, $12.
J. E. Little, *Phyllocactus speciosa rosea*, $1.

RHODODENDRON EXHIBITION.

JUNE 7 (*Changed from June 6, 7 and 8*)

ORCHIDS.—Display, arranged for effect, with foliage plants, in a space eight feet by five feet:
1st, J. S. Bailey, $30; 2d, J. E. Rothwell, $25.

Gratuities:—

E. J. Mitton, Display of Pelargoniums, $10.
J. S. Bailey, Display of Shrubby Calceolaria Golden Gem, $5.
J. L. Little, *Campanula Medium calycanthema*, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20 (*Changed from June 24 and 25*).

DECORATIVE PLANTS.—Group, named, arranged for effect, covering one hundred and fifty square feet:
1st, Mrs. J. L. Gardner, $30; 2d, E. S. Converse, $25.
GLOXINIAS.—Six plants in not less than eight-inch pots:
1st, J. L. Little, $10; 2d, Mrs. J. L. Gardner, $6; 3d, Mrs. J. L. Gardner, $3.
ORCHIDS.—Six plants, of six named varieties, in bloom:
1st, J. E. Rothwell, $15.
Three plants, of three named varieties, in bloom:
1st, E. J. Mitton, $10; 2d, J. E. Rothwell, $8.
Single specimen, named, in bloom:
1st, H. A. Wheeler, $5; 2d, J. E. Rothwell, $3.

Gratuities:—

E. S. Converse, Tuberous Begonias, $8.
A. F. Estabrook, Display, $5.

JULY 5.

Gratuity:—

E. J. Mitton, *Oncidium incurvum* and *Cattleya Gaskelliana*, $2.

AUGUST 9.

Gratuity:—

E. J. Mitton, *Cattleya Dowiana chrysotoxa* and *C. Gaskelliana*, $2.

AUGUST 16.

Gratuities:—

J. E. Rothwell, Collection of Cypripediums, $8.
E. J. Mitton, *Oncidium papilio*, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

PALMS.—Pair, in pots or tubs not less than eighteen inches in diameter:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.
Pair, in pots or tubs not more than fourteen inches in diameter:
1st, J. S. Bailey, $8; 2d, A. F. Estabrook, $6.

GREENHOUSE PLANTS.—Best finished group containing foliage plants of all descriptions, arranged for effect, covering two hundred square feet:
1st, J. S. Bailey, $50; 2d, Mrs. J. L. Gardner, $35; 3d, E. S. Converse, $25.
Six Greenhouse and Stove plants, decorative specimens of different named varieties, two crotons admissible:
1st, J. S. Bailey, $25; 2d, Mrs. J. L. Gardner, $20; 3d, E. S. Converse, $15.

CENTRE PIECE FOR TABLE.—For fifteen covers, living plants, in one receptacle:
1st, J. E. Rothwell, $10; 2d, E. J. Mitton, $8.

FERNS.—Five named varieties, no Adiantums admissible:
1st, E. S. Converse, $10; 2d, A. F. Estabrook, $6.
Specimen, other than Tree Fern:
1st, J. S. Bailey, $4; 2d, A. F. Estabrook, $3.

ADIANTUMS.—Five named varieties:
2d, A. F. Estabrook, $5.

DRACÆNAS.—Six named varieties:
1st, J. S Bailey, $8; 2d, Mrs. J. L. Gardner, $5.

CROTONS.—Twenty-five plants, not less than eighteen named varieties, in not less than six-inch pots:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.

BEGONIA REX.—Ten pots of ten named varieties:
1st, E. S. Converse, $10; 2d, E. J. Mitton, $8; 3d, Mrs. J. L. Gardner, $6.

OUVIRANDRA FENESTRALIS.—1st, Mrs. J. L. Gardner, $6; 2d, E. S. Converse, $4.

Gratuities:—

J. E. Rothwell, Collection of Orchids, $10.
Lager & Hurrell, " " " $8.
E. J. Mitton, " " " $2.
C. H. Souther, Display of Platyceriums, $4.
Dr. A. H. Flower, *Nephrolepis exaltata*, $2.
R. & J. Farquhar & Co., Display of Foliage Plants, $20.
W. H. Lincoln, Group of Foliage Plants, $12.
Mrs. J. L. Gardner, Display of Flowering Plants, $5.
A. F. Estabrook, Bambusa, $2.
Yamanaka & Co., Display of Miniature Gardens and Dwarf Japanese Trees, $30.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

CHRYSANTHEMUMS.—Display of eight named plants, any or all classes, named varieties:
1st, J. S. Bailey, $60; 2d, Mrs. B. P. Cheney, $45; 3d, E. S. Converse, $35.

Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots of ordinary form.
1st, W. Hunnewell, $35; 2d, E. S. Converse, $25.

Three Japanese Incurved:
1st, Mrs. B. P. Cheney, $12.

Three Reflexed; distinct named varieties:
1st, Mrs. B. P. Cheney, $12; 2d, E. S. Converse, $10

Specimen Japanese Incurved; named variety:
1st, J. S. Bailey, $6; 2d, E. W. Converse, $5; 3d, J. S. Bailey, $4.

Specimen Reflexed, named variety:
1st, Mrs. B. P. Cheney, $6; 2d, E. S. Converse, $5; 3d, W. Hunnewell, $4.

Specimen Anemone Flowered, named variety:
1st, J. S. Bailey, $6; 2d, H. H. Rogers, $5; 3d, E. S. Converse, $4.

Specimen Pompon, named variety:
1st, E. S. Converse, $4.

Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
1st, E. A. Clark, $8; 2d, E. S. Converse, $6.

Six plants grown as above, but all of one color, Red:
1st, E. A. Clark, $4; 2d. E. A. Clark, $3; 3d, E. S. Converse, $2.
White:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Pink:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Yellow:
1st, E. A. Clark, $4; 2d, E. A. Clark, $3; 3d, E. S. Converse, $2.
Any other color:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Group of Chrysanthemums, arranged for effect, with palms and decorative foliaged plants, limited to one hundred square feet:
1st, Mrs. J. L. Gardner, $25.

Gratuities:—

E. S. Converse, Standard Chrysanthemums, twelve plants, $18.
W. Hunnewell, Display of Chrysanthemums, $6.
E. W. Converse, Chrysanthemum Pink Ivory, $2.
L. H. Foster, Display of *Nephrolepis Anna Foster*, $5.
F. R. Pierson & Co., *Nephrolepis Piersoni*, $5.
W. Hunnewell, *Salvia leucantha*, $3.
Mrs. J. L. Gardner, Seedling Asparagus, $3.
Lager & Hurrell, Display of Orchids, $20.
W. Hunnewell, Display of *Oncidium ornithorhynchum*, $5.
R. & J. Farquhar & Co., Display of Palms, Bay Trees, Araucarias, etc., $30.

SOCIETY'S GOLD MEDALS.

Spring Exhibition, March 19–23. F. R. Pierson & Co., for *Nephrolepis Piersoni*.
August 30. E. V. R. Thayer, for American Raised Seedling Orchids.

SOCIETY'S SILVER GILT MEDALS.

April 5. E. O. Orpet, for *Lælio-Cattleya*, G. S. Ball.
May 10. R. & J. Farquhar & Co., for The Farquhar Rose.
July 26. M. H. Walsh, for Seedling *Hydrangea superba*.
Annual Exhibition of Plants and Flowers, September 11–14. E. J. Mitton, for Display of Crotons.

SOCIETY'S SILVER MEDALS.

March 1. H. H. Rogers, for *Saxifraga sarmentosa tricolor superba*.
" " H. H. Hunnewell, for *Odontoglossum Midgleyanum*.
Spring Exhibition, March 19–23. W. McAllister, for Superior cultivation of *Dendrobium nobile*.

May 17. A. J. Loveless, for *Cattleya Mossiæ* var. *Evelyn Sloane.*

Rhododendron Exhibition, June 7. O. Ames, for *Cypripedium callosum* var. *Sanderæ.*

" " " " J. E. Rothwell, for *Lælio-Cattleya* × *Phœbe* var.

July 5. J. Tailby & Son, for Seedling *Richardia.*

Annual Exhibition of Plants and Flowers, September 11–14. W. A. Manda, for Golden variegated Privet.

Annual Exhibition of Plants and Flowers, September 11–14. H. T. Clinkaberry, for *Zygopetalum* × *Rœblingianum.*

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Cypripedium Sanderianum.*

Chrysanthemum Show, November 6–9. J. Wheeler, for *Cattleya mollis.*

SOCIETY'S BRONZE MEDALS.

May 31. E. J. Mitton, for *Lælia majalis.*

July 5. J. E. Rothwell, for *Cypripedium Cowleyanum.*

" " H. T. Clinkaberry, for *Cypripedium Mahleræ.*

Chrysanthemum Show, November 6–9. J E. Rothwell, for *Cattleya Rothwelliæ.*

FIRST CLASS CERTIFICATES OF MERIT.

March 1. J. E. Rothwell, for *Cypripedium Edmund Rothwell.*

" 8. G. Melvin, for Superior cultivation of *Oncidium Cavendishianum.*

Spring Exhibition, March 19–23. L. H. Foster, for *Nephrolepis Fosteriana.*

" " " " Harvard Botanic Garden, for *Richardia Pentlandii.*

" " " " W. P. Winsor, for *Cœlogyne pandurata.*

April 5. J. Garthley, for Superior cultivation of *Cypripedium villosum.*

May 3. J. Lawson, for Superior cultivation of *Brassia verrucosa.*

Rhododendron Exhibition, June 7. J. E. Rothwell, for *Cypripedium Mars.*

Rose and Strawberry Exhibition, June 19 and 20. D. F. Roy, for Superior cultivation of *Pteris ensiformis* var. *Victoriæ.*

July 5. E. Johansson, for Superior cultivation of *Cypripedium* × *Frau Ida Brandt* var.

" " O. Ames, for *Cypripedium I'Ansoni.*

" " G. Melvin, for Superior cultivation of *Odontoglossum læve.*

" 12. J. E. Rothwell, for *Cypripedium* × *Lord Derby.*

August 30. E. O. Orpet, for *Lælio-Cattleya Gladys.*

Annual Exhibition of Plants and Flowers, September 11-14.

Col. C. Pfaff, for *Dracæna lanuginosa.*

Lager & Hurrell, for *Cattleya Hardyana*, deep colored variety.

A. F. Estabrook, for *Adiantum Charlottæ.*

October Exhibition of Fruits and Vegetables, October 3 and 4. Blue Hill Nurseries, for *Arrhenatherum bulbosum variegatum.*

HONORABLE MENTION.

Spring Exhibition, March 19–23.

R. & J. Farquhar & Co., for *Schizanthus Wiestoniensis.*

M. H. Walsh, for Seedling Rambler Rose Fairy Queen.

M. H. Walsh, for Seedling Rambler Rose *La Fiemetta.*

Rhododendron Exhibition, June 7. J. S. Bailey, for *Kentia Duckhamii.*

July 12. A. T. Story, for Rambler Rose Dorothy Perkins.

August 23. J. E. Rothwell, for *Lælio-Cattleya* × *Edmund Rothwell.*

Annual Exhibition of Plants and Flowers, September 11-14.

Lager & Hurrell, for *Lælia grandis tenebrosa Summitosa.*

J. E. Rothwell, *Cypripedium Fairy Queen.*

J. S. Bailey, *Alocasia Warriniana.*

W. A Manda, New Hybrid Rose.

J. E. Rothwell, *Lælio–Cattleya* C. H. Holmes.

D. F. Roy, Seedling Canna, Mrs. E. S. Converse.

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Lælia* × *Oreniana.*

Amount appropriated for prizes and gratuities for 1901		$2,000 00
Amount awarded for prizes and gratuities .	$1,659 00	
Estimate cost of medals awarded . . .	270 00	1,929 00
Leaving an unexpended balance of . . .		$71 00

ARTHUR H. FEWKES,
JAMES WHEELER,
WILLIAM J. MARTIN,
ROBERT CAMERON,
ROBERT MELROSE GREY,
Committee on Plants.

Frond of the Pierson Fern.

Courtesy of the F. R. Pierson Company.

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1902.

By J. WOODWARD MANNING, Chairman.

Your committee would report that the exhibits of the present year have been of a high standard and indicative of that renewal and increase in interest that was hoped for when the project of a new exhibition hall was undertaken. The quality of the exhibits has been good, the method of exhibition has neither improved nor deteriorated, the objectionable features of an unsatisfactory color scheme of walls has been a continued drawback to showing exhibits to the best advantage, but we hope that there may be a means to remove this objection in the near future.

The distance of the hall from the business section of the city has prevented a continuous and satisfactory attendance of a majority of the committee at the various meetings, and has caused changes by resignation and otherwise of members of this body. This is a matter which will regulate itself in time, but which has caused, during the present year, an unequal burden of work on the few members who were able to attend.

Death has removed from the membership of the Flower Committee Mr. James Comley, who has served many years on this and other committees, and who, by his constant attendance up to within a few weeks of his death, has been a most valued and conscientious member. His exhibits had been of such unusual extent and of such high character that the loss of the same to the Society

has been very noticeable, but aside from this the committee has met a severe loss by his death in losing the value of his wide knowledge and experience as a judge.

The attendance at the exhibitions has been largely augmented and commences to prove the wisdom of a change of location of the hall; the character of the attendance is changed somewhat, as would be expected, but while we miss some faces of flower-lovers that we have cause to regret, there is, on the other hand, nothing to regret in the personnel of our present visitors.

To review the exhibits in a general way, special mention should be made of the following :—

The exhibitions of Orchids on February 8 and at later dates have proved most attractive, and included many rare and interesting forms. Probably no class of exhibits attract greater interest, though the general knowledge of the plants is less extended than among other classes. The coterie of orchid experts in this vicinity is such as to insure a good exhibition whenever a fair prize is offered, and many unique and noteworthy forms are shown at times in variety and quantity probably unequaled in the United States.

Your committee is in favor of extended inducement in drawing out added competition in this class.

At the exhibition of February 8, Mrs. John L. Gardner gained first and Col. Charles Pfaff second prizes for two notable exhibits, and other notable collections were shown during the year.

The Spring Exhibition had many fine entries in Roses, Carnations, and Violets, of which the carnations showed the greatest advancement in the quality of the flowers, both from the standpoint of distinction in varieties and in the skill shown in culture. The advantage of showing carnations for a less period of the Spring Exhibition than formerly was made apparent by the increased freshness of the exhibition, under the new exhibition rules. Mr. M. H. Walsh of Wood's Hole was awarded Honorable Mention for a new seedling Rambler rose named "Miss Simplicity."

The Peony contests in June were spirited, and brought out a fine exhibit both in quality and variety. The Kelway Silver Gilt Medal for a collection of eighteen named varieties was awarded

to Arthur H. Fewkes, and the second prize of the Kelway Bronze Medal was gained by George Hollis. Other notable exhibits of peonies were shown, among which could be mentioned those of T. C. Thurlow, Joseph H. White, Mrs. John L. Gardner, Mrs. E. M. Gill, and A. F. Estabrook as competitors. George Hollis was awarded a First Class Certificate for peony "Maud L. Richardson," and Honorable Mention for peony "Goliath," and entered the latter for the Prospective Prize.

The Rhododendron Show, though suffering a loss of two prominent exhibitors of former years, still proved one of the noteworthy exhibits of the year, and while competition among the classes was less than previously, yet the general displays were well staged and abundant. During this exhibition was shown a notable collection of German iris by Frederick J. Rea, to whom a First Class Certificate was awarded for same.

The Rose and Strawberry Exhibition of June 19 and 20 recalled something of the successful exhibits of former years; a pleasant relief after two unfavorable years for Rose shows. The competition was close, and in many respects the character and variety of the exhibition have not been exceeded in former years. New competitors have entered the field, showing a healthy interest and future for Rose exhibitions to come. Other notable exhibits of this show were that of a new hardy herbaceous perennial *Campanula Persicifolia*, var. *Moerheimii*, a fine white, very double variety of the peach-leaved harebell, shown by Frederick J. Rea, and a large vase each of superbly grown foxgloves and delphiniums, shown by Mrs. John L. Gardner.

Never have Japanese irises been shown to greater advantage than at the exhibition of July 5. The high culture, great variety, and quality of the flowers showed what this class is capable of as a decorative, hardy plant. Hardy herbaceous perennials were exhibited from this date through the balance of the season, and while the restrictions limited the number of bottles in a display, the quality and variety shown were satisfactory in every way.

Special prizes were awarded at this exhibition for noteworthy exhibits in Honorable Mentions to Frederick J. Rea for the new Hybrid Wichuraiana rose "Dorothy Perkins," and to H. A. Wheeler for the Shasta daisy, and a First Class Certificate to

Arthur H. Brigham, of Weston, for a display of a fine white variety of *Cypripedium spectabile.*

From July 19 to the end of the season, hardy perennial phloxes were notable for the size and quality of the exhibits, the perfection of truss and habit, and the size and color of the individual flowers. It is a class that forms as valuable an adjunct to the hardy flower-border as the peony, and at a season which enables each to be appreciated without rivalry.

Dahlias were first exhibited on July 19, and from that time to the Chrysanthemum Show enlivened the hall with their wealth of color and form. Previous reports have indicated the trend of popularity to this flower, and this season's exhibitions have reiterated the popularity and decorative value of the class. A notable break in type was shown in an exhibit by R. & J. Farquhar & Company, known as the "collerette class," in the example of the variety, President Viger, for which a First Class Certificate was awarded. The Dahlia Show of the Annual Exhibition was finely staged by a goodly number of exhibitors, and was a success in every way.

Gladioli has been another class in which continued improvement in variety and form of flowers has been apparent, and the collection of F. A. Blake of the Gandevensis type of hybrids has been good, while that of Arthur Cowee, of Berlin, New York, has contained many fine forms of both the Gandevensis and Lemoinei type of hybrids. Mr. Cowee's collection was awarded two Honorable Mentions.

Aquatics, though not shown in the great variety of families that have appeared in exhibitions of former years, have been well represented, by the *Nymphæas* of which Henry A. Dreer, of Philadelphia, exhibited a notable collection on September 12, among which a First Class Certificate was awarded to the variety "Mrs. C. M. Ward," and Honorable Mention was made to the same party for the variety "Philadelphia."

Chrysanthemums were never shown in greater variety and in better quality than in 1902. The halls were all well filled, the competition was close, and the high standard of former years was fully maintained. The public interest in the exhibition was good, and the culminating flower show of the year gave promise in

quality, competition, and public interest to encourage continued effort to make the exhibits of the Massachusetts Horticultural Society a standard for the country.

Some notable exhibits of new carnations and roses were shown at the Chrysanthemum Show, for which Peter Fisher of Ellis was awarded a Silver Medal for carnation "Enchantress"; A. Roper, a Silver Medal for carnation "Fair Maid"; a Silver Medal to E. G. Asmus, of West Hoboken, N. J., for the new yellow rose, "F. Deegen," the so-called "Twentieth Century" rose; and an Honorable Mention to the H. Dale Estate of Brampton, Canada, for the rose "Canadian Queen." A First Class Certificate was also awarded to Walter Hunnewell for a new unnamed sport from the Oriental Glory chrysanthemum.

Your committee was granted an appropriation of $2,500 for the year 1902. They have awarded in cash prizes $1,798, leaving a balance of $702, out of which must be deducted the cost of the additional awards of four Silver Gilt Medals, seven Silver Medals, one Bronze Medal, six First Class Certificates, and eleven Honorable Mentions.

The following awards have been made during the year:—

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1902.

January 4.

Freesias.—Vase of fifty spikes:
1st, Mrs. E. M. Gill, $2.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. E. M. Gill, $2.

Primula Sinensis.—Display of fifty or more individual blooms:
1st, Mrs. E. M. Gill, $2; 2d, Mrs. J. L. Gardner, $1.

February 8.

Carnations.—Display of cut blooms, with foliage, not less than six varieties in vases:
1st, M. A. Patten, $8; 2d, M. A. Patten, $6.

CAMELLIAS.—Display of named varieties, cut flowers with foliage, not less than twelve blooms, in not less than six varieties:
1st, Mrs. J. L. Gardner, $4.

Gratuities:—

A. Roper, Vase of Carnations, Fair Maid, $3.
Miss H. B. Winter, Carnations, $1.
Mrs. E. M. Gill, Cut Flowers, $2.

MARCH 1.

General Display.—Arranged for effect, in space of thirty or more square feet:
2d, Miss H. B. Winter, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
2d, Miss H. B. Winter, $1.

Gratuity:—

Mrs. E. M. Gill, Cut Flowers, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

HYBRID PERPETUAL ROSES.—Twelve blooms, in not less than four named varieties:
1st, Col. C. Pfaff, $10.
Six blooms, not less than three named varieties:
1st, Col. C. Pfaff, $5.
Twelve blooms of Ulrich Brunner:
1st, Col. C. Pfaff, $10.
TENDER ROSES, IN VASES.—Twenty-five blooms of the Bride:
1st, J. Pritchard, $10.
Twenty-five blooms of Bridesmaid:
1st, J. Pritchard, $10.
Twenty-five blooms of Liberty:
1st, Waban Rose Conservatories, $12.
Twenty-five blooms of any other variety:
1st, Waban Rose Conservatories, $8.
CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties:
1st, J. S. Bailey, $8; 2d, P. B. Bradley, $6.
Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, $3.

Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, $3; 2d, J. H. White, $2.
Twenty-five blooms of any named Light Pink variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White Variegated variety:
1st, M. A. Patten, $3.
VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, N. F. Comley, $3; 2d, Col. C. Pfaff, $2.
Bunch of one hundred blooms of Marie Louise:
1st, N. F. Comley, $3.
Bunch of one hundred blooms of any other double variety:
1st, N. F. Comley $3; 2d, N. F. Comley, $2.
Bunch of one hundred blooms of any single variety:
1st, W. Simms, $3; 2d, N. F. Comley, $2.

Gratuities:—

Col. C. Pfaff, Display of Roses, $12.
Miss E. J. Clark, Vase of Carnations, $2.
Col. C. Pfaff, Display of Orchids, $5.
N. F. Comley, Display of Camellias, $4.
J. H. White, Polyanthus, $2.
Mrs. E. M. Gill, Display, $4.

APRIL 5.

General Display.—Arranged for effect, in space of thirty or more square feet:
1st, J. S. Bailey, $6; 2d, Mrs. E. M. Gill, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, H. H. Rogers, $2; 2d, H. H. Rogers, $1.

MAY 10.

TULIPS.—Forty-eight blooms, not less than twelve named varieties:
1st, Dr. C. G. Weld, $4.
PANSIES.—Forty-eight blooms, not less than four varieties:
2d, Mrs. E. M. Gill, $4.
Gratuity:—
Mrs. E. M. Gill, Display of Cut Flowers, $3.

RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

H. H. Hunnewell Fund.

RHODODENDRONS.—Twelve distinct varieties of unquestioned hardiness, named:
1st, Mrs. J. L. Gardner, $20.
Six distinct varieties of unquestioned hardiness, named:
1st, Mrs. B. P. Cheney, $10.
Six tender varieties, named:
2d, Mrs. J. L. Gardner, $4.
Three tender varieties, named:
1st, Mrs. J. L. Gardner, $4.
HARDY AZALEAS.—Six varieties, one vase of each:
1st, Mrs. J. L. Gardner, $3.
Cluster of trusses, one variety:
2d, Mrs. J. L. Gardner, $1.

Society's Prizes.

GERMAN IRISES.—Thirty-six vases of three trusses each, of not less than twelve varieties:
1st, Mrs. J. L. Gardner, $4.
HARDY PYRETHRUMS.—Display of thirty bottles, Single and Double, six or more varieties:
1st, A. McLaren, $6; 2d, W. J. Clemson, $4.
Vase of Flowers:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

Mrs. B. P. Cheney, Display of Rhododendrons, $30.
Mrs. J. L. Gardner, " " " $12.
Hon. E. S. Converse, " " " $8.
W. J. Clemson, Vase of Pæonies, $5,
A. H. Fewkes, Display of Pæonies, $4.
C. W. Parker, Vase of *Iris pallida Dalmatica*, $1
W. H. Heustis & Son, *Kalmia latifolia*, $1.
Mrs. H. L. Higginson, Vase of *Clematis montana*, $1.
Blue Hill Nurseries, Hardy Perennials, $5.
J. S. Chase, Display, $2.
Mrs. E. M. Gill, Display, $2.

PÆONY EXHIBITION.

JUNE 14.

HERBACEOUS PEONIES.—Collection of thirty or more named varieties, Double:

1st, T. C. Thurlow, $12; 2d, G. Hollis, $10.

Collection of twelve or more named varieties:

1st, T. C. Thurlow, $6.

Specimen Bloom:

1st, J. H. White, $2; 2d, G. Hollis, $1.

Vase of blooms on long stems, arranged for effect in the Society's large China vases:

1st, Mrs. J. L. Gardner, $10; 2d, G. Hollis, $8; 3d, Mrs. E. M. Gill, $6; 4th, A. F. Estabrook, $4.

FOXGLOVES.—Twelve spikes:

1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner, $2; 3d, W. Whitman, $1.

Gratuities:—

O. B. Hadwen, Display of Pæonies, $5.
J. S. Chase, " " " $2.
Mrs. J. L. Gardner, Foxgloves, $2.
W. Whitman, " $1.
F. J. Rea, *Campanula persicifolia grandiflora*, $3.
Mrs. J. L. Gardner, Sweet Williams, $2.
Mrs. J. B. Lawrence, Lychnis, $1.
Dr. O. S. Paige, Pansies, $1.
Dr. O. S. Paige, Display of Roses, $2.
W. J. Clemson, Display of Roses and Gloxinias, $10.
Mrs. E. M. Gill, Display, $3.
Mrs. J. B. Lawrence, Display, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

HARDY ROSES.—Twenty-four distinct named varieties:

1st, J. H. White, $25; 2d, Miss E. J. Clark, $20.

Society's Prizes.

Sixteen named varieties, three of each variety:
1st, Dr. O. S. Paige, $15; 2d, Miss E. J. Clark, $10.
Twelve named varieties, three of each:
1st, A. F. Estabrook, $10.
Three named varieties, three of each:
1st, J. H. White, $3; 2d, Miss E. J. Clark, $2.
Twenty-four named varieties, one of each:
1st, Dr. O. S. Paige, $10.
Eighteen named varieties, one of each:
1st, J. H. White, $8; 2d, Miss E. J. Clark, $6; 3d, Mrs. J. L. Gardner, $4.
Twelve named varieties, one of each:
1st, Miss E. J. Clark, $6; 2d, J. H. White, $4.
Six named varieties, one of each:
1st, J. H. White, $4; 2d, Miss E. J. Clark, $3.
Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss E. J. Clark, $8; 2d, P. B. Bradley, $6; 3d, A. F. Estabrook, $4.
Six blooms of Baroness Rothschild:
1st, P. B. Bradley, $3; 2d, Dr. O. S. Paige, $2.
Six blooms of any other variety:
1st, P. B. Bradley, $4; 2d, A. F. Estabrook, $3; 3d, P. B. Bradley, $2; 4th, E. S. Converse, $1.
Best single bloom of any variety:
1st, P. B. Bradley, $2; 2d, Dr. O. S. Paige, $1.
General Display.—One hundred bottles of Hardy Roses, in the Society's racks, buds admissible;
1st, Mrs. E. M. Gill, $10; 2d, W. J. Clemson, $9; 3d, Dr. O. S. Paige, $8; 4th, Mrs. J. L. Gardner, $7; 5th, Miss E. J. Clark, $6; 6th, P. B. Bradley, $5.

Sweet Williams.—Display, eighteen vases of three trusses each, not less than six varieties:
1st, W. J. Clemson, $4; 2d, Mrs. J. L. Gardner, $3; 3d, W. E. Coburn, $2.

Vase of Flowers.—Best arranged:
1st, Mrs. E. M. Gill, $5; 2d, Miss H. B. Winter, $4.

Basket of Roses.—Arranged for effect:
1st, Mrs. E. M. Gill, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Roses, $4.
Mrs. E. M. Gill, Display of Roses, $4.
Mrs. E. A. Wilkie, Display of Roses and Nymphæas, $2.

W. J. Clemson, Sweet Williams, $2.
Mrs. J. L. Gardner, Display of Sweet Williams, $2.
G. Hollis, Display of Seedling Pæonies, $5.
J. S. Chase, Vase of Pæonies, $4.
Mrs. E. M. Gill, Vase of Pæonies, $2.
Mrs. J. L. Gardner, Vase of Foxgloves, $4.
Mrs. J. L. Gardner, Vase of Delphiniums, $3.
H. A. Wheeler, *Amaryllis Formosissima*, $1.
J. H. White, Collection, $2.

JULY 5. (*Changed from July 12.*)

IRIS KÆMPFERI.—Fifteen varieties, three of each:
1st, Mrs. J. L. Gardner, $6; 2d, T. C. Thurlow, $4.
Six varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner $2.
SWEET WILLIAMS.—Auricula flowered, thirty spikes, of not less than six distinct varieties:
2d, W. J. Clemson, $2.
DELPHINIUMS.—Collection of twenty spikes, not less than five varieties:
1st, Mrs. J. L. Gardner, $5; 2d, C. Blomberg, $4.
Display, thirty vases, of three spikes each:
1st, Mrs. J. L. Gardner, $10.
HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, W. J. Clemson, $5.
VASE OF FLOWERS.—1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

F. J. Rea, Display of Crimson Rambler Rose, $3.
W. J. Clemson, Sweet Peas, $3.
L. H Atkins, Shirley Poppies, $2.
W. J. Clemson, Collection of flowers, $3.
C Blomberg, " " " $1.
Mrs. E. M. Gill, Display, $2.

JULY 12. (*Changed from July 19.*)

HOLLYHOCKS.—Best display, single and double varieties, in flat dishes:
1st, E. L. Lewis, $5; 2d, J. S. Chase, $4.
SHIRLEY POPPIES.—Display:
1st, L. H. Atkins, $3; 2d, Mrs J. Lewis, $2.
VASE OF FLOWERS.—Best arranged:
1st, Mrs. E. M. Gill, $4; 2d, W. C. Winter, $3.

Gratuities:—

G. Hollis, Display of Perennial Phloxes, $1.
Mrs. E. M. Gill, Danebrog Poppies, $1.
Miss A. H. Warburton, Crimson Rambler Roses and Poppies, $1.
Col. C. Pfaff, Display of Hybrid Roses, $4.
W. J. Clemson, Collection of Roses and Gloxinias, $2.
W. J. Clemson, Display of Sweet Peas, named, $3.
E. L. Lewis, Sweet Peas, $1.
Mrs. J. B. Lawrence, Display of Dianthuses, $1.
B. P. Ware, Nymphæas, $1.
Blue Hill Nurseries, Display Herbaceous Plants and Cut Flowers, $3.
Mrs. J. B. Lawrence, Herbaceous Plants, Cut Blooms, $2.

JULY 19. (*Changed from July 26.*)

TUBEROUS BEGONIAS.—Collection, arranged with their own foliage, in flat dishes:
1st, E. S. Converse, $4.

HARDY AQUATIC FLOWERS.—Collection named:
1st, O. Ames, $8; 2d, Mrs. J. L. Gardner, $6.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.

Gratuities:

B. P. Ware, Display of Nymphæas, $1.
W. J. Clemson, Display of Perennial Phloxes, $2.
W. J. Clemson, Display of *Phlox Drummondi*, $1.
G. Hollis, Display of named Hardy Phloxes, $1.
E. L. Lewis, Display of Hollyhocks, $4.
W. J. Clemson, Sweet Peas, named, $2.
Mrs. J. Lewis, Display of Annual Poppies, $1.
B. F. Flanders, Display of Dahlias, $1.
J. E. Rothwell, Display of Cut Orchids, $6.

JULY 26. (*Changed from August 2.*)

SWEET PEAS.—Display of named varieties, filling thirty vases, arranged with their own foliage:
1st, W. J. Clemson, $6; 2d, E. L. Lewis, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, W. J. Clemson, $6; 2d, C. Blomberg, $5.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

Blue Hill Nurseries, Display of Herbaceous Plants, $2.
C. Blomberg, " " " " $1.
Blue Hill Nurseries, Display of Perennial Phloxes, $1.
W. J. Clemson, " " " " $1.
Mrs. G. Duncan, " " " " $1.
G. Hollis, " " " " $1.
E. L. Lewis, Display of Hollyhocks, $2.
Mrs. E. M. Gill, Display of Roses, $1.
A. Nixon, Display of Cut Flowers, $1.

AUGUST 2. (*Changed from August 9.*)

PERENNIAL PHLOXES.—Twelve named varieties, one truss of each:
1st, T. C. Thurlow, $5; 2d, G. Hollis, $4.

ANTIRRHINUMS.—Display of thirty vases, three spikes in each, not less than ten varieties:
1st, Mrs. J. B. Lawrence, $3; 2d, W. J. Clemson, $2.
General Display.—Arranged for effect in space of thirty or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. J. Lewis, $2; 2d, Mrs. E. M. Gill, $1.

Gratuities:—

T. C. Thurlow, Display of Perennial Phloxes, $4.
W. J. Clemson, Display of Phloxes, $1.
B. F. Flanders, Display of Dahlias, $3.
F. A. Blake, Display of Gloxinias, $3.
Shady Hill Nursery Co., Display of Herbaceous Plants and Cut Flowers, $7.

AUGUST 9. (*Changed from August 16.*)

ANNUALS.—General Display, named, not less than fifty varieties, filling not less than one hundred and fifty bottles:
1st, E. S. Converse, $12; 2d, Mrs. J. L. Gardner, $10.

Gratuities:—

G. Hollis, Display of Perennial Phloxes, $1.
B. F. Flanders, Display of Dahlias, $2.
Mrs. J. B. Lawrence, Display of Dahlias, $1.

A. F. Schenkelberger, Display of named Gladioli, $1.
E. L. Lewis, Display of Sweet Peas and Roses, $1.
Mrs. E. M. Gill, Display of Cut Flowers, $4.
Mrs. J. B. Lawrence, Display of Cut Flowers, $1.

AUGUST 16. (*Changed from August 23.*)

MONTBRETIAS.—Display in Vases:
2d, Mrs. J. B. Lawrence, $2.

PERENNIAL PHLOXES.—General display, in not less than thirty vases:
1st, T. C. Thurlow, $8; 2d, G. Hollis, $6; 3d, Mrs. G. Duncan, $4.

Gratuities:—

W. Whitman, Display of Perennial Phloxes, $4.
J. B. Lawrence, Display of Dahlias, $2.
W. P. Lothrop, " " " $2.
R. P. Struthers, " " " $1.

AUGUST 23. (*Changed from August 30.*)

Theodore Lyman Fund.

ASTERS.—Large flowered, of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, F. A. Blake, $6; 2d, W. Whitman, $5.

VICTORIA AND PÆONY FLOWERED.—Thirty blooms, not less than twelve varieties:
1st, J. H. White, $4; 2d, W. Whitman, $3; 3d, F. A. Blake, $2.

SEMPLE.—Thirty blooms, not less than three varieties:
2d, E. S. Converse, $3.

POMPON.—Twenty-four cut plants, not less than six varieties:
1st, W. Whitman, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Shady Hill Nursery, $6; 2d, C. Blomberg, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Asters, $3.
E. S. Converse, " " " $1.
C. Blomberg, Display of Herbaceous Plants, $1.
F. J. Rea, Display of Gladioli, $1.
W. Whitman, Display of Gladioli and Asters, $3.
W. P. Lothrop, Display of Asters and Dahlias, named, $3.
G. Hollis, two large vases of Cut Flowers, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Theodore Lyman Fund.

AQUATICS.—General Display of Nymphæas, Nelumbiums, Sedges, Papyrus, and other Aquatic Plants, arranged for effect, to include not less than twenty-five blooms of Nymphæas:
1st, O. Ames, $25.

GLADIOLI.—Display of named and unnamed varieties, filling one hundred vases, arranged for effect, with any foliage:
1st, W. P. Lothrop, $8.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:
1st, W. C. Winter, $4; 2d, H. F. Burt, $3.
Fancy, eighteen blooms, named varieties:
1st, H. F. Burt, $4.
Cactus, twelve blooms, named varieties:
1st, H. F. Burt, $4; 2d, W. H. Symonds, $3; 3d, W. P. Lothrop, $2.
Decorative, twelve blooms, named varieties:
1st, W. C. Winter. $4; 2d, W. P. Lothrop, $3; 3d, H. F. Burt, $2.
Show, six blooms, named varieties:
1st, W. C. Winter, $2; 3d, W. C. Winter, $1.
Fancy, six blooms, named varieties:
1st, H. F. Burt, $2; 2d, H. F. Burt, $1.
Best single bloom, of any class, introduction of 1900 or later:
1st, W. P. Lothrop, $1.
Pompon, twelve vases of three blooms each, named varieties:
1st, J. K. Alexander, $3; 2d, W. C. Winter, $2; 3d, W. P. Lothrop, $1.
Single, twelve vases of three blooms each, named varieties:
1st, W. C. Winter, $2; 2d, H. F. Burt, $1.
General Display, one hundred or more bottles, in the Society's racks, arranged for effect:
1st, W. C. Winter, $12; 2d, J. K. Alexander, $10; 3d, Mrs. J. B. Lawrence, $8: 4th, W. G. Winsor, $6; 5th, W. H. Symonds, $4.

TROPÆOLUMS.—Display, with their foliage, filling twenty-five vases, not over eighteen blooms of one variety:
1st, Mrs. E. M. Gill, $3; 2d, E. S. Converse, $2.

MARIGOLDS.—Display of French and African, filling twenty-five vases:
1st, W. Whitman, $3: 2d, Mrs. J. L. Gardner, $2.

DOUBLE ZINNIAS.—Fifty flowers, not less than twelve varieties:
1st, Col. C. Pfaff, $3; 2d, Mrs. J. L. Gardner, $2.

China Asters.—Display of Large Flowered, of all classes, not less than fifty vases, three flowers in each:

1st, Col. C. Pfaff, $8; 2d, Miss F. H. Breed, $6; 3d, W. Whitman, $4.

Perennial Asters.— Collection of Native or Introduced species and varieties:

1st, Mrs. E. M. Gill, $5; 2d, Misses E. A. and M. S. Doran, $4.

Dianthuses.—Collection of Annual and Biennial varieties, filling thirty bottles:

1st, Mrs. J. B. Lawrence, $3.

Ornamental Fruited Hardy Trees and Shrubs.—Collection of Cut Branches, named:

1st, Col. C. Pfaff, $5.

Hardy Herbaceous Flowers.—Thirty bottles:

1st, Blue Hill Nurseries, $6; 2d, Shady Hill Nursery, $5.

Vase of Flowers.—For table decoration:

1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

H. F. Burt, Display of Dahlias, $6.
N. W. T. Knott, " " " $2.
R. P. Struthers, " " " $2.
E. S. Converse, Display of China Asters, $1.
C. L. Hovey, Display of Marigolds, $1.
O. B. Hadwen, Display of Gladioli, $3.
F. J. Rea, Display of Gladioli and Perennial Asters, $1.
A. B. Howard, Collection of Petunias and Verbenas, $2.
G. McWilliams, Collection of Dipladenias, $5.
Mrs. H. L. Higginson, Vase of *Lilium Wallichianum Superbum*, $1.
Henry A. Dreer, Exhibit of Nymphæas, $10.
Henry A. Dreer, " " " $10.
Col. C. Pfaff, Collection of Hardy Cut Flowers and Shrubs, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $4.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

October 3 and 4.

Gratuities:—

H. F. Burt, Display of Cactus, Fancy, and Show Dahlias, $10.
W. P. Lothrop, Display of Dahlias, $5.
H. F. Burt, Display of Show Dahlias, $4.
C. L. Hovey, Display of Dahlias, $4.
Mrs. E. M. Gill, " " " $4.

R. & J. Farquhar & Co., Display of Liliums, $6.
R. & J. Farquhar & Co., Display of Gladioli, $6.
Blue Hill Nurseries, Display of Herbaceous Flowers, $8.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Special Prizes.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.—Twenty-five blooms, of twenty-five distinct varieties, named, a piece of plate or value in money:
1st, Mrs. B. P. Cheney, $18; 2d, Miss E. J. Clark, $12.
Six Vases of six named varieties, ten blooms each:
1st, Mrs. A. W. Spencer, $30; 2d, Miss E. J. Clark, $25.

Henry A. Gane Memorial Fund.

For the best twelve specimen blooms of any of the Seedling Chrysanthemums originated by the late Henry A. Gane:
1st, C. D. Sias, $20; 2d, Mrs. A. W. Spencer, $10.

Society's Prizes.

Twelve blooms, Japanese, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6.
Twelve blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6; 3d, P. B. Robb, $4.
Twelve blooms, Anemone, named, in vases:
1st, E. S. Converse, $8.
Six blooms, Incurved, named, in vases:
1st, E. S. Converse, $5.
Six blooms, Japanese, named, in vases:
1st, Miss E. J. Clark, $6; 2d, Mrs. B. P. Cheney, $4; 3d, P. B. Robb, $2.
Six blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Reflexed, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Anemone, named, in vases:
1st, E. S. Converse, $5; 3d, E. S. Converse, $2.
Six best varieties, named, introductions of the current year:
1st, Miss E. J. Clark, $6.

Vase of ten blooms, on long stems, Pink, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias, $8; 3d, Miss E. J. Clark, $6.

Vase of ten blooms, on long stems, Red, named:
1st, Mrs. A. W. Spencer, $10; 2d, Miss E. J. Clark, $8; 3d, Mrs. B. P. Cheney, $6.

Vase of ten blooms, on long stems, White, named:
1st, Mrs. A. W. Spencer, $10; 2d, Mrs. A. W. Spencer, $8; 3d, C. D. Sias, $6.

Vase of ten blooms, on long stems, Yellow, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias, $8; 3d, Miss E. J. Clark,

Vase of ten blooms, on long stems, any other color named:
1st, C. D. Sias, $10; 2d, Mrs. A. W. Spencer, $8; 3d, Mrs. B. P. Cheney, $6.

VIOLETS.—Collection of varieties, fifty blooms each:
1st, N. F. Comley, $5; 2d, Col. C. Pfaff, $4.

Gratuities:

E. N. Pierce & Sons, Four of the Society's large vases, of Chrysanthemums, $30.
Mrs. E. M. Gill, Display of Chrysanthemums, $12.
Mrs. A. W. Spencer, Display of Chrysanthemums, $10.
E. S. Converse, Display of Single and Pompon Chrysanthemums, $8.
Mrs. B. P. Cheney, Display of Chrysanthemums, $5.
G. A. Clark, Vase of Chrysanthemums, $3.
Col. Charles Pfaff, Display of Orchids, $6.
Patten & Co., Twelve vases assorted Carnations, $12.
S. J. Reuter, two vases of Carnations, $5.
G. J. Small, " " " " $4.
Little South Floral Co., Display of Carnations, $3.
H. A. Stevens & Co., Vase of Carnation, Gov. Wolcott, $1.
S. J. Goddard, Vase of Carnation, The Queen, $1.
C. Jurgens, Large vase of American Beauty Roses, $7.

SOCIETY'S SILVER GILT MEDALS.

February 8. Mrs. J. L. Gardner, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition March 19–23. W. P. Winsor, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Chrysanthemum Show, November 6–9. Mrs. F. L. Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

KELWAY SILVER GILT MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. A. H. Fewkes, first prize for Collection of Herbaceous Pæonies, named varieties, single or double.

SOCIETY'S SILVER MEDAL.

February 8. Col. C. Pfaff, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 19–23. J. E. Rothwell, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Rose and Strawberry Exhibition, June 19 and 20. F. J. Rea, for *Campanula persicifolia Moorheimii.*

Chrysanthemum Show, November 6–9. O. Ames, second prize for Display of Orchids, named species and varieties, single or double.

Chrysanthemum Show. P. Fisher, for large vase of Carnation, Enchantress. (New.)

Chrysanthemum Show. A. Roper, for large vase of Carnation. Fair Maid. (New.)

Chrysanthemum Show. E. G. Asmus, for Twentieth Century Rose, F. Deegen.

KELWAY BRONZE MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. G. Hollis, second prize for Collection of Herbaceous Pæonies, named varieties, single or double.

FIRST CLASS CERTIFICATES OF MERIT.

Rhododendron Exhibition, June 7. F. J. Rea, for Collection of German Irises, named.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Maud L. Richardson.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Goliath.

July 5. A. H. Brigham, for white variety of *Cypripedium spectabile.*

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Mrs. C. W. Ward.

October Exhibition of Fruits and Vegetables, October 3 and 4. R. & J. Farquhar, for new type of single Dahlia, designated "Collerette Dahlia" named President Viger.

Chrysanthemum Show, November 6–9. W. Hunnewell, Sport from Chrysanthemum Oriental Glory, unnamed.

HONORABLE MENTION.

Spring Exhibition, March 19–23. M. H. Walsh, for Seedling Rambler Rose Miss Simplicity.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Seedling No. 28.

July 5. F. J. Rea, for Rosa Wichuraiana hybrida Dorothy Perkins.

July 5. H. A. Wheeler, for Shasta Daisy.

July 19. G. Hollis, for Seedling Hardy Phlox Gaiety.

August 23. A. Cowee, for Display of Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Pennsylvanica.

Annual Exhibition of Plants and Flowers, September 11–14. A. Cowee, for Display of Groff's Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. M. H. Walsh, for Seedling Perennial Phlox.

Annual Exhibition of Plants and Flowers, September 11–14. Floral Company, South Natick, for Carnation The Queen.

Chrysanthemum Show, November 6–9. H. Dale Estate, Brampton, Ontario, for new rose Canadian Queen.

J. Woodward Manning,
Michael H. Norton,
Kenneth Finlayson,
Frederick S. Davis,
James Comley.
} *Committee on Flowers.*

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1902.

By E. W. WOOD, Chairman.

The exhibitions of the past year have shown that the different varieties of fruit grown in the State have been more generally represented than usual. The apple crop, as usual on the even calendar year, has been abundant and of good quality. Pears, owing to the cold, wet weather when they were in bloom, did not set a full crop, but they have been fairly represented in the exhibitions. Peaches have been shown in much larger quantities than for several years; the experience of some large growers, especially in Connecticut, seems to show that with improved care and cultivation this most desirable fruit may be successfully grown in New England. With plums we notice an increase of the Japanese varieties though seemingly at the expense of some of the best of the old varieties. The Reine Claude de Bavay, Green Gage, and McLaughlin have not been shown for several years.

The small fruits were shown during the season in the usual quantity. Of new fruits the attention of the committee was called to specimens of peaches, plums, strawberries, and grapes, some of which seemed promising, but have not yet been sufficiently tested to warrant recommendation for general cultivation.

Commercial fruit growers have had a fairly profitable season. Cold storage and constantly increasing foreign demand for apples have prevented a glut in the home market, and prices have been well sustained. The export of apples has been confined almost entirely to the English market. The French and German as well as other foreign markets offer an opportunity for widely extending this trade.

Among growers of pears for market the tendency has been a reduction of the varieties; many varieties formerly grown at a profit have almost disappeared from our markets.

The most unfavorable feature in the outlook for the future of profitable commercial fruit growing is in the increase of insects injurious to almost every tree and plant.

The desire to secure new fruits and flowers and the increased facilities by which they may be obtained have resulted in the addition of many valuable trees, plants, fruits, and flowers; but with them we have received some of the most injurious insects with which the fruit grower has to contend, largely increasing the labor and expense necessary to preserve the trees and produce merchantable fruit.

The committee has awarded in premiums and gratuities $1,600, leaving an unexpended balance of $100.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1902.

SPRING EXHIBITION.

March 19, 20, 21, 22 and 23.

Winter Apples.—Baldwin:

1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, M. W. Chadbourne, $1.

Northern Spy:

1st, G. V. Fletcher, $3; 2d, G. C. Rice, $2.

Roxbury Russet:

1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.

Tompkins King:
1st, G. C. Rice, $3.
Any other variety;
1st, G. V. Fletcher, Rhode Island Greening, $3; 2d, W. H. Hunt, Hunt Russet, $2; 3d, G. V. Fletcher, Mackintosh, $1.
WINTER PEARS.—Any variety:
1st, G. V. Fletcher, Anjou, $3; 2d, W. Fenno, Josephine of Malines, $2.
STRAWBERRIES.—One pint:
1st, E. S. Converse, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Gratuity:—

W. C. Winter, Nectarines, $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

STRAWBERRIES.—Four quarts of any variety:
1st, V. Frost, the Lyman Plate, value $20; 2d, G. V. Fletcher, the Lyman Plate, value $16; 5th, G. F. Wheeler, the Lyman Plate, value, $8.

Special Prizes offered by the Society.

Two quarts of any variety best adapted for garden cultivation for home use:
1st, G. V. Fletcher, Marshall, $6; 3d, I. E. Coburn, Jessie, $4: 4th, G. F. Wheeler, Minute Man, $3.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:
1st, I. E. Coburn, $20; 2d, G. F. Wheeler, $15.
Ten baskets, not less than three varieties, two quarts each:
1st, I. E. Coburn, $15; 2d, G. V. Fletcher, $12; 3d, G. F. Wheeler, $10; 4th, W. Wheeler, $8.
Five baskets of one variety, two quarts each:
1st, G. V. Fletcher, $8; 2d, I. E. Coburn, $6; 3d, G. F. Wheeler, $5; 4th, W. Wheeler, $4.

Two quarts of Belmont:
1st, I. E. Coburn, $4; 2d, G. V. Fletcher, $3.
Brandywine:
1st, E. S. Converse, $4; 3d, G. F. Wheeler, $2.
Bubach:
1st, G. V. Fletcher, $4; 2d, O. R. Robbins, $3.
Clyde:
1st, G. V. Fletcher, $4; 3d, G. F. Wheeler, $2.
Crescent:
3d, G. F. Wheeler, $2.
Haverland:
1st, I. E. Coburn, $4; 2d, G. F. Wheeler, $3; 3d, W. Wheeler, $2.
Hersey:
3d, G. F. Wheeler, $2.
Jessie:
1st, I. E. Coburn, $4.
Marshall:
1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, J. A. Beebe, $2.
Miner's Prolific:
1st, G. F. Wheeler, $4; 2d, W. Wheeler, $3.
Nick Ohmer:
1st, J. A. Beebe, $4; 2d, I. E. Coburn, $3; 3d, E. S. Converse, $2.
Parker Earle:
1st, I. E. Coburn, $4.
Sample:
1st, I. E. Coburn, $4; 2d, E. S. Converse, $3; 3d, G. V. Fletcher, $2.
Any other variety:
1st, S. H. Warren, Great Scott, $4; 2d, I. E. Coburn, Ridgeway, $3; 3d, G. F. Wheeler, Minute Man, $2.
One quart of any variety not previously exhibited:
1st, S. H. Warren, Great Scott, $5; 2d, S. H. Warren, No. 19, $4.

CHERRIES.—Two quarts of any variety:
1st, Miss E. W. Rumrill, Black Tartarian, $4; 2d, J. H. Fletcher, Royal Ann, $3; 3d, G. V. Fletcher, Black Tartarian, $2.

FOREIGN GRAPES.—Two bunches of any variety:
1st, Miss E. J. Clark, Black Hamburg, $6; 2d, W. C. Winter, Muscat of Alexandria, $4.

FORCED PEACHES.—Six specimens of any variety:
1st, Miss E. J. Clark, Hale's Early, $3.

Gratuity:—

P. B. Bradley, Nectarines, $3.

JULY 5. (*Changed from July 12.*)

STRAWBERRIES.—Two quarts of any variety:
1st, W. H. Monroe, Seedling, $4; 2d. G. V. Fletcher, Marshall, $3.
CHERRIES.—Two quarts of Black Eagle:
1st, G. V. Fletcher, $3; 2d, E. S. Converse, $2.
Black Tartarian:
1st, G. V. Fletcher, $3.
Coe's Transparent:
1st, C. S. Smith, $3; 2d, J. L. Bird, $2.
Downer:
1st, M. W. Chadbourne, $3; 2d, C. S. Smith, $2: 3d, E. S. Converse, $1.
Any other variety:
1st, M. W Chadbourne, White Heart, $3; 2d, C. P Travis, Elton, $2; 3d, C. S. Smith, Hyde Seedling, $1.

Gratuity:—

J. S. Chase, Triumph Gooseberries, $1.

JULY 12. (*Changed from July 19.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. S. Converse, $2.
CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $4; 2d, W. J. Clemson, Fay's, $3; 3d, D. Mahoney, Fay's, $2; 4th, C. Pfaff, Fay's, $1.
Two quarts of any White variety:
1st, C. Pfaff, White Grape, $3; 2d, J. S. Chase, Transparent, $2; 3d, W. J. Clemson, White Grape, $1.
GOOSEBERRIES.—Two quarts of any variety of American origin:
1st, J. S. Chase, Triumph, $4; 2d, W. J. Clemson, Columbus, $3; 3d, J. S. Chase, Columbus, $2; 4th D. Mahoney, Columbus, $1.

Gratuities:—

W. J. Clemson, Collection of Cherries, $2.
M. W. Chadbourne, Cherries, $1.
W. C. Winter, Collection, $1.
Miss E. J. Clark, Collection of Grapes, Peaches, and Nectarines, a Silver Medal.

JULY 19. (*Changed from July 26.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. L. Lewis, $2; 3d, E. S. Converse, $1.
CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $3; 2d, D. L. Fiske, $2.
Two quarts of any White variety:
1st, H. R. Kinney, White Grape, $2.
GOOSEBERRIES.—Two quarts of any foreign variety:
1st, W. J. Clemson, Whitesmith, $4; 2d, D. Mahoney, Whitesmith, $3; 3d, G. L. Brown, Silversmith, $2.

Gratuities:—

W. C. Winter, Plums, $1.
W. J. Clemson, Collection, $1.

JULY 26. (*Changed from August 2.*)

BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, Dorchester, $3.
APPLES.—Tetofsky:
1st, W. C. Winter, $3; 3d, D. L. Fiske, $1.
Yellow Transparent:
1st. E. S. Converse, $3; 2d, G. L. Brown, $2; 3d, D. L. Fiske, $1.
PEARS.—Summer Doyenne:
1st, W. Fenno, $3; 2d, E. S. Converse, $2; 3d, D. L. Fiske, $1.

Gratuities:—

W. J. Clemson, Peaches, $1.
D. L. Fiske, " $1.
A. Low, " $1.

AUGUST 2. (*Changed from August 9.*)

APPLES.—Red Astrachan:
1st, M. W. Chadbourne, $3; 2d, W. H. Hunt, $2; 3d, F. W. Damon, $1.
Sweet Bough:
1st, C. B. Travis, $3; 2d, G. V. Fletcher, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, E. S. Converse, Yellow Transparent, $2; 3d, J. C. Stone, Williams, $1.
PEARS.—Giffard:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, W. Fenno, Doyenne, $2; 3d, J. L. Bird, Wilder, $1.

BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
PEACHES.—Open culture, any variety:
1st, Mrs. E. J. Cutter, Alexander, $3; 2d, D. L. Fiske, Waterloo, $2; 3d, A. Low, Hale's Early, $1.

Gratuity:—

Mrs. J. C. Whitin, Collection of Grapes, Nectarines, and Peaches, $3.

AUGUST 9. (*Changed from August 16.*)

APPLES.—Oldenburg:
1st, Mrs. A. F. Estabrook, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. Fenno, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, M. W. Chadbourne, Williams, $2; 3d, W. H. Hunt, Astrachan, $1.
PEARS.—Clapp's Favorite:
1st, Mrs. H. A. Clark, $3; 2d, E. Torrey, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, A. T. Brown, Giffard, $3; 2d, F. W. Damon, Giffard, $2; 3d, W. Fenno, Giffard, $1.
PEACHES.—Twelve specimens of outdoor culture, of any variety:
1st, A. Low, Alexander, $3; 2d, A Low, Hale's Early, $2; 3d, A. M. Clement, Greenboro, $1.
Six specimens of cold house or pot culture:
1st, Mrs. J. C. Whitin, Crimson Garland, $3; 2d, Mrs. J. C. Whitin, Royal George, $2.
BLACKBERRIES.—Two quarts of any variety:
1st, N. T. Kidder, Dorchester, $3; 2d, M. W. Chadbourne, Dorchester, $2; 3d, W. J. Clemson, Agawam, $1.
PLUMS.—Japanese, any variety:
1st, E. L. Lewis, Chabot, $3; 2d, E. L. Lewis, Abundance, $2; 3d, W. Warburton, Abundance, $1.
NECTARINES.—Orchard house culture, twelve specimens:
1st, Mrs. J. C. Whitin, $4.
FOREIGN GRAPES.—Two bunches of any variety:
1st, E. S. Converse, Black Hamburg, $5; 2d, Mrs. J. C. Whitin, Alexander, $4.

AUGUST 16. (*Changed from August 23.*)

APPLES.—Chenango:
1st, C. F. Curtis, $3; 2d, G. L. Brown, $2.
Summer Pippin:
1st, W. Fenno, $3.

Williams:
1st, V. Frost, $1; 2d, J. C. Stone, $2; 3d, A. F. Coolidge, $1.
Any other variety:
1st, W. Fenno, Sops of Wine, $3; 2d, G. V. Fletcher, Sweet Bough, $2; 3d, J. C. Stone, Gravenstein, $1.

PEARS.—Rostiezer:
1st, E. S Converse, $3; 2d, M. W. Chadbourne $2; 3d, A. T. Brown, $1.
Tyson:
1st, J. L. Bird, $3; 2d, W. Fenno, $2.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, E. Torrey, Clapp's Favorite, $2; 3d, W. Fenno, Clapp's Favorite, $1.

PEACHES.—Any variety:
1st, C. F. Curtis, $3; 2d, A. M. Clement, $2; 3d, G V. Fletcher, $1.

PLUMS, JAPANESE.—Abundance:
1st, E. L. Lewis, $3; 2d, D. L. Fiske, $2; 3d, J. Dunn, $1.
Burbank:
1st, D. L Fiske, $3; 2d, A. M. Clement, $2; 3d, A. Low, $1.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3; 2d, E. L. Lewis, Chabot, $2; 3d, D. L. Fiske, Red Nagate, $1.

AUGUST 23. (*Changed from August 30.*)

APPLES.—Foundling:
1st, C. M. Handley, $3.
Gravenstein:
1st, W. Fenno, $3; 2d, Mrs. H. A. Clark, $2; 3d, A. F. Coolidge. $1.
Maiden's Blush:
1st, W. C. Winter, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Porter:
1st, G. V. Fletcher, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, J. C. Stone, Williams, $3; 2d, Mrs. H. A. Clark, Oldenburg, $2; 3d, A. E. Henderson, Bietigheimer, $1.

PEARS.—Andrews:
1st, E. S. Converse, $3; 2d, J. C. Stone, $2.
Bartlett:
1st, W. Milman. $3; 2d, V. Frost, $2; 3d, A. T. Brown. $1.
Any other variety:
1st, Mrs. H. A. Clark, Clapp's Favorite, $3; 2d, F. W. Damon, Clapp's Favorite, $2; 3d, J. B. Shurtleff, Jr., Clapp's Favorite, $1.

PEACHES.—Collection:
1st, D. L. Fiske, $3; 2d, A. Low, $2.

Single dish of any variety:
1st, F. H. Evans, Carman, $3; 2d, A. Low, Carman, $2; 3d, D. L. Fiske, St. John, $1.

PLUMS.—Bradshaw:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, A. Low, $1.

Any other variety:
1st, W. P. Hutchinson, Lincoln, $3; 2d, E. L. Lewis, Washington, $2; 3d, C. C. Field, Burbank, $1.

AUGUST 30.

Gratuity:—

W. O. Sweet, Collection of Peaches, Plums, and Apples, $2.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape, not less than six pounds:
1st, Miss E. J. Clark, $15.

Society's Prizes.

APPLES.—Fall Orange or Holden:
1st, C. M. Handley, $3; 2d, F. J. Kinney, $2.

Foundling:
1st, C. M. Handley, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.

Garden Royal:
1st, C. M. Handley, $3; 2d, C. B. Travis, $2.

Gravenstein:
1st, J. H. Locke, $3; 2d, W. Heustis & Son, $2; 3d, W. Fenno, $1.

Hubbardston:
1st, C. M. Handley, $3; 2d, L. F. Cooke, $2; 3d, A. E. Hartshorn, $1.

Mackintosh:
1st, W. O. Sweet, $3; 2d, L. Doran, $2; 3d, F. J. Kinney, $1.

Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, E. E. Cole, $1.

Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, W. C. Winter, $1.

Porter:
1st, J. C. Stone, $3; 2d, G. V. Fletcher, $2; 3d, M. W. Chadbourne, $1.
Pumpkin Sweet:
1st, J. Parker, $3; 2d, O. B. Hadwen, $2.
Red Bietigheimer:
1st, J. H. White, $3; 2d, G. C. Rice, $2; 3d, M. Sullivan, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, D. L. Fiske, $1.
Washington Strawberry:
1st, G. C. Rice, $3; 2d, A. E. Hartshorn, $2; 3d, W. Fenno, $1.
Wealthy:
1st, G. C. Rice, $3; 2d, W. D. Hinds, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, A. F. Estabrook, Twenty Ounce, $3; 2d, G. C. Rice, Somerset, $2; 3d, W. Fenno, Alexander, $1.

Crab Apples.—Transcendent, twenty-four specimens:
1st, C. E. Wiggin, $2; 2d, Miss E. W. Rumrill, $1.
Any other variety:
1st, M. W. Chadbourne, $2; 2d, A. E. Hartshorn, $1.

Pears.—Bartlett:
1st, V. Frost, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. H. Derby, $1.
Belle Lucrative:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.
Bosc:
1st, J. B. Shurtleff, Jr., $3; 2d, A. T. Brown, $2; 3d, W. H. Derby, $1.
Boussock:
1st, E. Torrey, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Hardy:
1st, W. Milman, $3; 2d, W. Fenno, $2.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Paradise of Autumn:
1st, W. Milman, $3; 2d, W. Fenno, $2; 3d, G. F. Pierce, $1.
Seckel:
1st, W. Milman, $3; 2d, A. T. Brown, $2; 3d, W. Patterson, $1.
Sheldon:
1st, G. E. Freeman, $3; 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Souvenir du Congrès:
1st, W. Fenno, $3; 2d, A. T. Brown, $2.
Any other variety:
1st, E. Torrey, Flemish Beauty, $3; 2d, W. Fenno, Pratt, $2; 3d, W. Heustis & Son, Bonne d' Ezée, $1.

Peaches.—Coolidge's Favorite:
1st, D. L. Fiske, $3.

Crawford's Early:
1st, D. L. Fiske, $3; 2d, G. V. Fletcher, $2; 3d, J. A. Beebe, $1.
Crosby:
1st, D. L. Fiske, $3; 3d, W. D. Hinds, $1.
Foster:
1st, D. L. Fiske, $3; 2d, J. C. Stone, $2; 3d, S. H. Warren, $1.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
1st, E. L. Lewis, $3: 2d, D. L. Fiske, $2.
Any other variety:
1st, W. D. Hinds, Champion, $3; 2d, C. F. Curtis, Champion, $2; 3d, F. H. Evans, Elberta, $1.
Any variety of orchard house culture:
1st, J. H. White, $4.

NECTARINES.—Outdoor culture, any variety:
1st, W. Fenno, $2.

PLUMS.—Imperial Gage:
1st, E. S. Converse, $3; 2d, F. J. Kinney, $2.
Lombard:
1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, H. R. Kinney, Bradshaw, $3; 2d, V. Frost, Yellow Egg, $2; 3d, G. V. Fletcher, Yellow Egg, $1.

JAPANESE PLUMS.—Any variety:
1st, W. Warburton, $3; 2d, D. L. Fiske, $2; 3d, W. C. Winter, $1.

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Any other variety:
1st, Miss E. J. Clark, Gros Guillaume, $5; 2d, Miss E. J. Clark, Gros Maroc, $4; 3d, Miss E. J. Clark, Mrs. Pearson, $3.

NATIVE GRAPES.—Six bunches of Campbell's Early:
1st, F. J. Kinney, $3; 2d, L. Darling, $2.
Massasoit:
1st, J. S. Chase, $3; 2d, F. W. Damon, $2.
Moore's Early;
1st, G. W. Jameson, $3; 2d, E. L. Lewis, $2; 3d, F W. Damon, $1.
Any other variety:
1st, J. S. Chase, Delaware, $3; 2d, H. R. Kinney, Worden, $2; 3d, F. W. Damon, Lindley, $1.
Six bunches from girdled vines, of any variety:
1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Green Mountain, $2

Gratuities:—

H. Eaton, Collection of Apples from dwarf trees set out in 1889, $2.

M. W. Chadbourne, Collection, $2.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

Special Prizes.

Samuel Appleton Fund.

APPLES.—Baldwin:

1st, J. C. Stone, $4; 2d, M. Sullivan, $3; 3d, Goodell Farm, $2; 4th, M. W. Chadbourne, $1.

Hubbardston:

1st, A. Frost, $4; 2d, C. M. Handley, $3; 3d, F. J. Kinney, $2; 4th, L. F. Cooke, $1.

PEARS.—Bosc:

1st, C. F. Curtis, $4; 2d, G. V. Fletcher, $3; 3d, A. T. Brown, $2; 4th, J. L. Bird, $1.

Sheldon:

1st, E. Torrey, $4; 2d, J. L. Bird, $3; 3d, G. V. Fletcher, $2; 4th, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:

1st, C. F. Boyden, $4; 2d, C. E. Gates, $3; 3d, F. J. Kinney, $2; 4th, E. M. Bruce, $1.

Rhode Island Greening:

1st, A. F. Coolidge, $4; 2d, W. P. Hutchinson, $3; 3d, G. V. Fletcher, $2; 4th, A. Frost, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:

1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, A. T. Brown, $2; 4th, A. F. Coolidge, $1.

Bartlett:

1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, A. T. Brown, $2.

GRAPES.—Concord, twelve bunches:

1st, H. R. Kinney, $4; 2d, E. A. Adams, $3; 3d, J. S. Chase, $2; 4th, G. V. Fletcher, $1.

Worden:
1st, H. R. Kinney, $4; 2d, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Dutch Codlin:
1st, Mrs. S. A. Nye, $2; 2d, W. Fenno, $1.
Fall Orange or Holden:
1st, C. M. Handley, $3.
Fletcher Russet:
1st, E. R. Teele, $3; 2d, C. M. Handley, $2; 3d, G. V. Fletcher, $1.
Foundling:
1st, C. M. Handley, $4; 2d, E. M. Bruce, $3; 3d, O. B. Hadwen, $2.
Gloria Mundi:
1st, C. D. Eames, $3; 2d, E. M. Bruce, $2.
Golden Russet:
1st, H. R. Kinney, $2.
Lady's Sweet:
2d, W. Fenno, $1.
Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, W. Fenno, $1.
Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, G. C. Rice, $1.
Porter:
1st, A. Frost, $3; 2d, L. F. Cooke, $2; 3d, M. Sullivan, $1.
Pound Sweet:
1st, G. C. Rice, $3; 2d, G. V. Fletcher, $2; 3d, E. M. Bruce, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, D. L. Fiske, $2; 3d, O. B. Hadwen, $1.
Palmer:
1st, E. M. Bruce, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.
Wealthy:
1st, M. Sullivan, $3; 2d, C. M. Handley, $2; 3d, G. C. Rice, $1.
Any other variety:
1st, J. B. Shurtleff, Jr., King, $3; 2d, J. Parker, Belleflower, $2; 3d, M. Martin, King, $1.

Regular Prizes.

PEARS.—Angouleme:
1st, W. H. Derby, $4; 2d, J. L. Bird, $3; 3d, S. Coolidge, $2; 4th, A. T. Brown, $1.
Clairgeau:
1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, F. W. Damon, $1.
Comice:
1st, A. T. Brown, $3; 2d, J. L. Bird, $2; 3d, W. Fenno, $1.

Dana's Hovey:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, W. Heustis & Son, $2; 4th, F. W. Damon, $1.
Diel:
1st, A. T. Brown, $3; 2d, F. W. Damon, $2; 3d, A. K. Gould, $1.
Fulton:
1st, E. S. Converse, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Hardy:
1st, Mrs. E. M. Gill, $3; 2d, W. Milman, $2; 3d, A. K. Gould, $1.
Howell:
1st, S. Coolidge, $3; 2d, W. Fenno, $2.
Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.
Lawrence:
1st, A. T. Brown, $3; 2d, M. W. Chadbourne, $2; 3d, W. Fenno, $1.
Louise Bonne of Jersey:
1st, W. H. Derby, $3; 2d, M. Sullivan, $2; 3d, W. Fenno, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Merriam:
1st, W. Heustis & Son, $3; 2d, F. W. Damon, $2; 3d, W. Fenno, $1.
Onondaga:
1st, J. L. Bird, $3; 2d, C. B. Travis, $2; 3d, W. Fenno, $1.
Seckel:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, M. W. Chadbourne, $2; 4th, D. Perkins, $1.
Sheldon:
1st, E. Torrey, $4; 2d, D. Perkins, $3; 3d, F. W. Damon, $2; 4th, G. F. Wheeler, $1.
Superfin:
1st, W. Fenno, $3; 2d, F. W. Damon, $2.
Urbaniste:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, W. Fenno, Pratt, $3; 2d, J. L. Bird, Kingsessing, $2; 3d, W. Fenno, St. Michael Archangel, $1.

QUINCES.—Champion;
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.
Orange:
1st, G. V. Fletcher, $3; 2d, W. Fenno, $2; 3d, J. C. Stone, $1.
Pear:
1st, G. L. Brown, $3.
Rea:
1st, G. V. Fletcher, $3.
Any other variety:
1st, J. S. Chase, $3.

PEACHES.—Crawford's Late:

1st, D. L. Fiske, $3; 2d, C. P. Trowbridge, $2; 3d, S. H. Warren, $1.

Any other variety:

1st, C. F. Fenno, $3; 2d, E. P. Ripley, $2; 3d, G. V. Fletcher, $1.

PLUMS.—Coe's Golden Drop:

1st, C. Scully, $2.

Yellow Egg:

1st, G. V. Fletcher, $2.

Any other variety:

1st, H. R. Kinney, Shipper's Pride, $2; 2d, D. L. Fiske, Satsuma, $1.

NATIVE GRAPES.—Six bunches of Brighton:

1st, C. W. Libby, $3; 2d, E. A. Adams, $2; 3d, J. S. Chase, $1.

Delaware:

1st, J. S. Chase, $4; 2d, W. T. Hutchinson, $3; 3d, W. Fenno, $2; 4th, H. R. Kinney, $1.

Eumelan:

1st, J. S. Chase, $3.

Herbert:

1st, G. W. Jameson, $3; 2d, J. S. Chase, $2; 3d, C. W. Libby, $1.

Iona:

2d, J. S. Chase, $2.

Lindley:

1st, C. W. Libby, $3; 2d, J. S. Chase, $2.

Niagara:

1st, J. S Chase, $3; 2d, E. S. Converse, $2; 3d, E. L. Lewis, $1.

Pocklington:

1st, H. R. Kinney, $4; 2d, J. S. Chase, $3; 3d, F. H. Jackson, $2; 4th, C. W. Libby, $1.

Prentiss:

1st, J. S. Chase, $3.

Wilder:

1st, E. A. Adams, $3.

Any other variety:

1st, J. S. Chase, $3; 2d, G. W. Jameson, $2; 3d, C. W. Libby, $1.

Any variety from girdled vines:

1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Salem, $2; 3d, H. R. Kinney, Concord, $1.

CRANBERRIES.—Half-peck:

1st, C. P. Trowbridge, $3; 2d, L. J. Fosdick, $2; 3d, L. J. Fosdick, $1

Gratuities:—

W. Fenno, Collection of Pears and Apples, $10.

Miss E. J. Clark, Collection of Pears and Apples, $2.

M. W. Chadbourne, Collection, $2.

Mrs. F. L. Ames, Muscat of Alexandria Grapes, a Silver Medal.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Benjamin V. French Fund.

APPLES.—Baldwin:

1st, M. W. Chadbourne, $3; 2d, Mrs. M. B. Whiting, $2; 3d, G. V. Fletcher, $1.

Rhode Island Greening:

1st, Miss A. Whiting, $3; 2d, A. Frost, $2; 3d, G. V. Fletcher, $1.

Society's Prizes.

APPLES.—Danvers Sweet:

1st, J. K. Manning, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1.

Fameuse:

1st, G. V. Fletcher, $3; 2d, M. W. Chadbourne, $2; 3d, G. C. Rice, $1.

Fletcher Russet:

1st, E. R. Teele, $3; 2d, G. V. Fletcher, $2; 3d, W. H. Teele, $1.

Hubbardston:

1st, A. Frost, $3; 2d, F. J. Kinney, $2; 3d, A. T. Leavitt, $1.

Hunt Russet:

1st, W. G. Kendall, $3; 2d, C. F. Boyden, $2.

Jacob's Sweet:

1st, M. Martin, $3; 2d, C. F. Curtis, $2.

Lady's Sweet:

1st, O. B. Wyman, $3; 2d, D. L. Fiske, $2; 3d, F. J. Kinney, $1.

Mackintosh:

1st, F. J. Kinney, $3; 2d, E. M. Bruce, $2; 3d, G. C. Rice, $1.

Northern Spy:

1st, G. V. Fletcher, $3; 2d, O. B. Wyman, $2; 3d, A. E. Hartshorn, $1.

Roxbury Russet:

1st, H. R. Kinney, $3; 2d, W. H. Boyden, $2; 3d, A. E. Hartshorn, $1.

Tolman's Sweet:

1st, G. V. Fletcher, $3; 2d, Mrs. A. E. Underwood, $2; 3d, A. Frost, $1.

Tompkins King:

1st, C. F. Boyden, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, G. C. Rice, $1.

Any other variety:

1st, Mrs. A. E. Underwood, Belleflower, $3; 2d, E. E. Doran, Belleflower, $2; 3d, J. Parker, Belleflower, $1.

PEARS.—Angouleme:

1st, E. Torrey, $4; 2d, F. W. Damon, $3; 3d, J. L. Bird, $2; 4th, W. Fenno, 1$.

Anjou:

1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, E. S. Converse, $2; 4th, W. Fenno, $1.

Bosc:

1st, A. T. Brown, $4; 2d, G. V. Fletcher, $3; 3d, J. L. Bird, $2; 4th, J. B. Shurtleff, Jr., $1.

Clairgeau:

1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1

Comice:

1st, A. T. Brown, $4; 2d, J. L. Bird, $3; 3d, W. Fenno, $2; 4th, A. K. Gould, $1.

Dana's Hovey:

1st, A. T. Brown, $4; 2d, W. G. Kendall, $3; 3d, E. W. Howe, $2; 4th, W. Milman, $1.

Diel:

1st, A. K. Gould, $3; 2d, A. T. Brown, $2.

Glout Morceau:

1st, Mrs. A. A. Johnson, $3; 2d, W. Fenno, $2; 3d, E. A. Hall, $1.

Josephine of Malines:

1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, J. B. Shurtleff, Jr., $1.

Langelier:

1st, A. T. Brown, $3; 2d, A. K. Gould, $2; 3d, W. Fenno, $1.

Lawrence:

1st, W. Fenno, $3; 2d, M. Sullivan, $2; 3d, J. L. Bird, $1.

Vicar:

1st, J. L. Bird, $3; 2d, A. T Brown, $2; 3d, E. S. Converse, $1.

Winter Nelis:

1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.

Any other variety:

1st, E. Torrey, Beurré d'Arenberg, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, A. T. Brown, Seckel, $1.

QUINCES.—Any variety:

1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, W. Fenno, Orange, $1.

Gratuity:—

M. W. Chadbourne, Collection, $2.

E. W. WOOD,
CHARLES F. CURTIS,
WARREN FENNO,
J. WILLARD HILL,
GEORGE F. PIERCE,
JOHN L. BIRD,
FREDERICK W. DAMON.
} *Committee on Fruits.*

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1902.

By Warren Howard Heustis, Chairman.

The past season has been unusually favorable for plant growth, and we have to report displays of vegetables far above the average.

At the winter exhibitions there were very full entries in all classes. The tomatoes grown by C. A. Learned were especially noticeable, both for size and quality, and were considered the best shown here for years. The vines on which they were grown were particularly thrifty and the fruit set very low down.

The interest in exhibiting produce is increasing, as the number of exhibitors this year was sixty, against forty competitors last year.

There has been hardly a good specimen of green-flesh melon shown this year, which would lead one to think that this class of fruit must be grown under glass like a cucumber and even then the life of the vine is very short.

There has been a fair showing of salmon-flesh melons and from this we would infer that this melon is not as subject to fungus or insect pests as the green-flesh.

At the September and November shows a silver and a bronze medal were offered for eight roots of celery shown without side branches, which resulted in the exhibition of a remarkably fine lot.

There was enough celery at the November show to extend completely around the small hall. At the Annual Exhibition of Fruits and Vegetables in October, Mr. Simmons, of Rockland, Mass., showed an excellent looking potato which he has called "Simmons' Model" and your committee thought it deserving of a First Class Certificate of Merit.

We hope it will continue to be in its future development as satisfactory as it appears to be at present. We are sorry to know that our appropriation is to be cut down twenty-five per cent as we found it was originally small enough.

We have expended for prizes and gratuities $1156.00, leaving an unexpended balance of $44.00, out of which is to be paid the cost of two silver medals, two bronze medals, and one First Class Certificate of Merit.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1902.

January 4.

Radishes.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.

Cucumbers.—Pair of any variety:
1st, W. C. Winter, $3; 2d, Mrs. J. L. Gardner, $2; 3d, E. F. Scolley, $1.

Cauliflowers.—Four specimens:
1st, C. M. Handley, $3.

Celery.—Four roots of any variety:
1st, A. E. Hartshorn, Boston Market, $3; 2d, W. Heustis & Son, Boston Market, $2; 3d, W. Heustis & Son, Giant Pascal, $1.

Lettuce.—Four heads of Tennisball:
2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

Parsley.—Two quarts:
1st, W. J. Clemson, Chappell's, $2; 2d, W. J. Clemson, Champion, $1.

Mushrooms.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, H. R. Kinney, $2.

Tomatoes.—Twelve specimens:
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

Gratuities:—

E. L. Lewis, Collection, $3.
A. E. Hartshorn, " $2.
W. Heustis & Son, " $1.
A. Low, " $1.

FEBRUARY 8.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.
SALSIFY.—Twelve specimens:
1st, V. Frost, $3.
CUCUMBERS.—Pair of any variety:
1st, W. C. Winter, $3.
CELERY.—Four roots of any variety:
1st, W. Heustis & Son, Pascal, $3; 2d, A. E. Hartshorn, Paris Golden, $2; 3d, W. Heustis & Son, Boston Market, $1.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads of Tennisball:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, C. F. Smith, $2.
TOMATOES.—Twelve specimens;
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

Gratuity:—

A. E. Hartshorn, Collection, $2.

MARCH 8.

Gratuity:—

G. D. Moore, Lettuce, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.

CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads of Tennisball:
1st, Wyman Bros., $3; 2d, W. W. Rawson, $2; 3d, J. C. Stone, $1.
WATER CRESS.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, B. P. Ware, $1.
PARSLEY.—Two quarts:
1st, W. J. Clemson, $2; 2d, J. C. Stone, $1.
MUSHROOMS.—Twenty-four specimens:
1st, Wyman Bros., $3; 2d, H. R. Kinney, $2; 3d, H. R. Kinney, $1.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, Wyman Bros., $2; 3d, W. H. Derby, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, $3; 2d, W. C. Winter, $2.

Gratuities:—

E. S. Converse, Beans, $1.
M. W. Chadbourne, Artichokes, $1.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $2.
G. D. Moore, " $1.
W. W. Rawson, " $1.
H. E. Rich, " $1.

APRIL 5.

BEETS.—Twelve specimens of Turnip Rooted
1st, W. Warburton, $3; 2d, A. Nixon, $2; 3d, A. Low, $1.
PARSNIPS.—Twelve specimens:
1st, A. Nixon, $3; 2d, W. Warburton, $2; 3d, J. Nuttall, $1.
RADISHES.—Four bunches:
1st, A. Nixon, $2; 2d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, H. R. Kinney, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. C. Winter, $3.

Gratuities:—

A. E. Hartshorn, Collection, $2.
A. Low, " $1.

MAY 10.

William J. Walker Fund.

ASPARAGUS.—Four bunches of twelve stalks each:
1st, W. H. Hunt, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, W. C. Winter $2.
Any other variety:
1st, E. M. Bruce, $3; 2d, E. M. Bruce, $2; 3d, E. M. Bruce, $1.
SPINACH.—Peck.
1st, A. Low, $3; 2d, G D. Moore, $2; 3d, A E. Hartshorn, $1.
DANDELIONS.—Peck.
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, J. C. Stone, $2.
RHUBARB —Twelve stalks:
1st, W. Heustis & Son, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, W. C. Winter, $2; 3d, A. Low, $1.

Gratuities:—

A. E. Hartshorn,	Collection,	$2.
W. J. Clemson,	"	$1.
W. Heustis & Son,	"	$1.
A. Low,	"	$1.
G. D. Moore,	"	$1.
J. C. Stone,	"	$1.
W. C. Winter,	"	$1.

RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Theodore Lyman Fund.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
CARROTS.—Twelve specimens:
1st, W. J. Clemson, Short Horn, $3; 2d, W. J. Clemson, Early Forcing, $2; 3d, A. E. Hartshorn, Early Forcing, $1.
RADISHES.—Four bunches of Turnip Rooted:
1st, W J. Clemson, $2; 2d, A. E. Hartshorn, $1.

ASPARAGUS.—Four bunches:
1st, W. H. Hunt, $3.
CUCUMBERS.—Pair:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.
LETTUCE.—Four heads of any variety:
1st, W. Heustis & Son, Big Boston, $3; 2d, W. Heustis & Son, Tennisball, $2; 3d, V. Frost, Big Boston, $1.
RHUBARB.—Twelve stalks:
1st, W. J. Clemson, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, A. J. Edwards, $2.

Gratuities:—

W. J. Clemson, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
A. Low, " $1.

JUNE 14.

Gratuities:—

W. H. Hunt, Asparagus, $1.
A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

BEETS.—Twelve specimens of Summer Turnip Rooted:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $3; 2d, T. Valentine, $2; 3d, W. J. Clemson, $1.
CUCUMBERS.—Pair of White Spine:
1st, V. Frost, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Any other variety:
1st, N. T. Kidder, $3; 2d, A. E. Hartshorn, $2.
CABBAGES.—Three of any variety, trimmed:
1st, G. D. Moore, Early Spring, $3; 2d, G. D. Moore, Wakefield, $2.

LETTUCE.—Four heads of Tennisball:

1st, W. Heustis & Son, $3; 2d, T. Valentine, $2; 3d, A. E. Hartshorn, $1.

Any other variety:

1st, E. L. Lewis, Defiance, $3; 2d, E. L. Lewis, Deacon, $2; 3d, E. L. Lewis, Immensity, $1.

PEAS.—Half-peck of any variety:

1st, W. J. Clemson, Gradus, $3; 2d, A. E. Hartshorn, Gradus, $2; 3d, P. B. Bradley, Gradus, $1.

Gratuities:—

W. H. Hunt, Asparagus, $1.
N. T. Kidder, Cauliflowers, $2.
E. S. Converse, Tomatoes, $1.
G. D. Moore, Collection, $3.
A. E. Hartshorn, " $2
W. Heustis & Son, " $2.
E. L. Lewis, " $2.

JULY 5. (*Changed from July 12.*)

POTATOES.—Twelve specimens:

1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.

ONIONS.—Twelve specimens:

1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.

SQUASHES.—Four specimens of Long Warted:

1st, J. C. Stone, $3.

Scalloped:

1st, J. C. Stone, $3.

CABBAGES.—Three of any variety, trimmed:

1st, G. D. Moore, Succession, $3; 2d, W. Heustis & Son, Early Spring, $2; 3d, G. D. Moore, Early, Spring, $1.

BEANS.—Half-peck of Wax:

1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.

Any other variety:

1st, G. D. Moore, $3.

PEAS.—Half-peck of American Wonder:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.

Half-peck of Advancer:

1st, A. E. Hartshorn, $3; 2d, Mrs. E. M. Gill, $2.

Half-peck of any other variety.

1st, A. E. Hartshorn, $3; 2d, A. Low, $2; 3d, F. Tetlow, $1.

Gratuities:—

W. Heustis & Son,	Collection,	$3.
E. L. Lewis,	"	$3.
W. J. Clemson,	"	$2.
G. D. Moore,	"	$2.
A. Low,	"	$1.

JULY 12. (*Changed from July 19.*)

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, F. J. Kinney, Hebron, $1.

CABBAGES.—Three Drumhead, trimmed:
1st, G. D. Moore, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.

LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

BEANS.—Half-peck of Wax:
1st, E. L. Lewis, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Half-peck of any green variety:
1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.

SQUASHES.—Four specimens of Long Warted:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, H. Leavitt, $1.
Four specimens of White Scalloped:
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2.

Gratuities:—

E. L. Lewis,	Collection,	$3.
W. J. Clemson,	"	$2.
W. Warburton,	"	$2.
Mrs. E. M. Gill,	"	$1.
W. Heustis & Son,	"	$1.
H. Leavitt,	"	$1.
G. D. Moore,	"	$1.

JULY 19. (*Changed from July 26.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.

LETTUCE.—Four heads of Tennisball:
1st, W. Heustis & Son, $2.
Any other variety:
1st, H. R. Kinney, Wonderful, $3; 2d, E. L. Lewis, Deacon, $2.

PEAS.—Half-peck of Stratagem:
1st, A. Nixon, $3.
Any other variety:
1st, H. R. Kinney, Champion, $3; 2d, J. Thorpe, Carter's Daisy, $2; 3d, A. E. Hartshorn, Telephone, $1.
SWEET CORN.—Twelve ears:
1st, G. D. Moore, Farquhar's Early, $3; 2d, J. C. Stone, Cory, $2.
TOMATOES.—Open culture, twelve specimens:
1st, A. E. Hartshorn, Acme, $3; 2d, G. D. Moore, Earliana, $2; 3d, J. C. Stone, Atlantic, $1.

Gratuities:—

W. J. Clemson,	Collection,	$2.
W. Heustis & Son,	"	$2.
E. L. Lewis,	"	$2.
A. Nixon,	"	$2.
J. Thorpe,	"	$2.
W. Warburton,	"	$2.
A. E. Hartshorn,	"	$1.

JULY 26. (*Changed from August 2.*)

POTATOES.—Twelve specimens:
1st. E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, J. W. Burns, Early Northern, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3; 2d, T. Valentine, $ 2.
SWEET CORN.—Twelve ears of Crosby:
1st, G. D. Moore, $3; 2d, J. C. Stone, $2.
Any other variety:
1st, G. D. Moore, Potter's Excelsior, $3; 2d, G. D. Moore, Cory, $2; 3d, J. C. Stone, Cory, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, May's Favorite, $3; 2d, W. Warburton, Dwarf Champion, $2; 3d, A. E. Hartshorn, Acme, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $4; 2d, Mrs. S. C. Pierce, $3.

Gratuities:—

W. J. Clemson,	Collection,	$1.
E. L. Lewis,	"	$1.
W Warburton,	"	$1.

AUGUST 2. (*Changed from August 9.*)

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. J. Clemson, $2; 3d, E. L. Lewis, $1.
TURNIPS.—Twelve specimens:
1st, E. L. Lewis, $2.
CABBAGES.—Three specimens:
1st, W. Heustis & Son, Succession, $3; 2d, W. Heustis & Son, No. 2, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, J. Thorpe, $3.
Two quarts of Horticultural, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2.
TOMATOES.—Twelve specimens:
1st, V. Frost, Belmont, $3; 2d, J. Thorpe, Matchless, $2; 3d, J. Thorpe, Dwarf Aristocrat, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3.

Gratuity:—

W. J. Clemson, Collection, $1.

AUGUST 9. (*Changed from August 16.*)

CARROTS.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, A. Nixon, $1.
SALMON FLESH MELONS.—Four specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
SWEET CORN.—Twelve ears:
1st, W. J. Clemson, $3; 2d, J. C. Stone, $2; 3d, E. L. Lewis, $1.
TOMATOES.—Twelve specimens:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.
EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3.

Gratuity:—

E. L. Lewis, Collection, $1.

AUGUST 16. (*Changed from August 23.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Clark's No. 1, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, J. W. Burns, $1.

ONIONS.—Twelve specimens:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, T. Valentine, $1.
SALMON FLESH MELONS.—Any variety, four specimens:
2d, G. D. Moore, $2.
CELERY.—Four roots of any variety:
1st, A. F. Coolidge, $3; 2d, F. Tetlow, $2; 3d, J. Thorpe, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2; 3d, J. W. Burns, $1.
SWEET CORN.—Twelve ears of any variety other than Potter's Excelsior:
1st, J. C. Stone, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, A. F. Coolidge, Stone, $3; 2d, A. F. Coolidge, Belmont, $2; 3d, W. Heustis & Son, Belmont, $1.
PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, W. Warburton, $1.
Any other variety:
1st, E. L. Lewis, $3; 2d, W. Warburton, $2; 3d, A. E. Hartshorn, $1.

Gratuities:—

W. J. Clemson,	Collection,	$2.
W. Heustis & Son,	"	$1.
A. Low,	"	$1.
T. Valentine,	"	$1.

AUGUST 23. (*Changed from August 30.*)

BEETS.—Twelve specimens:
1st, W. Warburton, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.
GREEN FLESH MELONS.—Four specimens:
1st, A. E. Hartshorn, $3.
SALMON FLESH MELONS.—Four specimens:
1st, V. Frost, $3; 2d, A. E. Hartshorn, $2.
WATERMELONS.—Pair:
3d, J. Thorpe, $1.
CAULIFLOWERS.—Four specimens:
1st, DeSouza Bros., $3; 2d, C. M. Handley, $2; 3d, W. H. Teele, $1.
CELERY.—Four roots:
1st, F. Tetlow, $3; 2d, A. F. Coolidge, $2; 3d, A. E. Hartshorn, $1.
MARTYNIAS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. S. Converse, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $3; 2d, Boston Mycological Club, $2.

Gratuities:—

W. Heustis & Son, Collection, $1.
A. Low, " $1.
J. B. Shurtleff, Jr., " $1.
W. Warburton, " $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

CELERY.—Eight roots without side branches:
1st, A. Nixon, A Silver Medal; 2d, V. Frost, A Bronze Medal.

Regular Prizes.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. Warburton, $2; 3d, W. Warburton, $1.
PARSNIPS.—Twelve specimens:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.
TURNIPS.—Twelve specimens of Flat:
1st, G. F. Wheeler, $3; 2d, W. Wheeler, $2; 3d, E. L. Lewis, $1.
SALMON FLESH MELONS.—Four specimens:
1st, J. A. Beebe, $3; 2d, J. C. Stone, $2.
WATERMELONS.—Pair:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
CABBAGES.—Three specimens, any variety:
1st, A. Low, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
CAULIFLOWERS.—Four specimens:
1st, C. M. Handley, $3; 2d, W. H. Teele, $2; 3d, E. R. Teele, $1.
LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Deacon, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Immensity, $1.
CELERY.—Four roots of any variety:
1st, A. Nixon, $3; 2d, A. F. Coolidge, $2; 3d, G. D. Moore, $1.
PARSLEY.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, W. Warburton, $1.
BEANS.—Two quarts of Lima:
1st, Mrs. E. M. Gill, $3; 2d, V. Frost, $2; 3d, E. L. Lewis, $1.
SWEET CORN.—Twelve ears of any variety:
1st, A. F. Coolidge, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.

Egg Plant.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2.
Tomatoes.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1
Comrade:
1st, A. F. Coolidge, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1.
May's Favorite:
1st, A. F. Coolidge, $3; 2d, A. Low, $2; 3d, J. Thorpe, $1.
Any other variety:
1st, E. L. Lewis, Success, $3; 2d, E. L. Lewis, Stone, $2; 3d, W. R. Schaefer, New Imperial, $1.
Martynias.—Twelve specimens:
1st, A. Low, $2; 2d, E. S. Converse, $1.
Peppers.—Twelve specimens of Squash:
1st, A. Low, $2; 2d, L. Doran, $1.
Any other variety:
1st, E. L. Lewis, $2; 2d, W. Warburton, $1.

Gratuities:—

W. Heustis & Son,	Collection,	$5.
E. L. Lewis,	"	$5.
A. Low,	"	$4.
A. Nixon,	"	$3.
W. Warburton,	"	$3.
G. D. Moore,	"	$2.
C. W. Parker,	"	$1.
J. C. Stone,	"	$1.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

October 3 and 4.

Carrots.—Twelve specimens of Long Orange:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Scully, $1.
Twelve specimens of Intermediate:
1st, H. R. Kinney, $3; 2d, H. W. Anderson, $2; 3d, W. Warburton, $1.
Potatoes.—Twelve specimens of Carman, No. 1.
1st, E. L. Lewis, $3; 2d, H. W. Anderson, $2; 3d, G. F. Wheeler, $1.
Early Fortune:
1st, H. W. Anderson, $3; 2d, A. Low, $2; 3d, E. M. Bruce, $1.
Hebron:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Pfaff, $1.
Early Rose:
1st, H. R. Kinney, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Any other variety:

1st, E. A. Adams, New Queen, $3; 2d, H. R. Kinney, Walter Raleigh, $2; 3d, H. R. Kinney, American Wonder, $1.

SALSIFY.—Twelve specimens:

1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.

TURNIPS.—Twelve specimens of Flat:

1st, F. J. Kinney, $3; 2d, G. F. Wheeler, $2; 3d, G. F. Wheeler, $1.

Twelve specimens of Swedish:

1st, DeSouza Bros., $3; 2d, E. L. Lewis, $2.

ONIONS.—Twelve specimens of Danvers:

1st, W. H. Derby, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, C. Pfaff, $1.

Red:

1st, C. Pfaff, $3; 2d, DeSouza Bros., $2; 3d, E. M. Bruce, $1.

White:

1st, A. E. Hartshorn, $2; 2d, E. L Lewis, $1.

Any other variety:

1st, E. M. Bruce, $3; 2d, A. Nixon, $2; 3d, A. E. Hartshorn, $1.

SQUASHES.—Three specimens of Bay State:

1st, W. Wheeler, $3; 2d, G. F. Wheeler, $2; 3d, A. E. Hartshorn, $1.

Hubbard:

1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, G. F. Wheeler, $1.

Hybrid Turban:

1st, G. F. Wheeler, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Marrow:

1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.

Any other variety:

1st, J. Thorpe, Marblehead, $3; 2d, A. E. Hartshorn, Golden Hubbard, $2; 3d, F. J. Kinney, Golden Hubbard, $1.

CUCUMBERS.—Pair of White Spine:

1st, G. D. Moore, $3; 2d, W. H. Burpee, $2.

GREEN FLESH OR SALMON FLESH MELONS.—Four specimens:

1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.

WATERMELONS.—Pair:

1st, J. Thorpe, $3; 2d, J. Thorpe, $2; 3d, E. L. Lewis, $1.

BRUSSELS SPROUTS.—Half-peck:

1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2.

CABBAGES.—Three specimens of Drumhead, trimmed:

1st, E. Parker, $3; 2d, W. Warburton, $2; 3d, E. R. Teele, $1.

Savoy:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.

CAULIFLOWERS.—Four specimens:

1st, E. R. Teele, $4; 2d, W. H. Teele, $3; 3d, C. M. Handley, $2.

CELERY.—Best kept during the exhibition, four roots of Paris Golden:

1st, A. Nixon, $4; 2d, A. F. Coolidge, $3; 3d, W. Heustis & Son, $2.

Any other variety:
1st, A. Nixon, $4; 2d, W. Warburton, $3.

ENDIVE.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2; 3d, E. L. Lewis, $1.

LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, A. Nixon, $1.

PARSLEY.—Two quarts:
1st, W. Warburton, $2; 2d, C. Pfaff, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, O. R. Robbins, $2; 3d, H. W. Anderson, $1.

EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

May's Favorite:
1st, A. F. Coolidge, $3; 2d, C. Pfaff, $2; 3d, A. Low, $1.

Stone:
1st, J. Thorpe, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

Any other variety:
1st, A. F. Coolidge, $3; 2d, J. Thorpe, $2: 3d, A. Low, $1.

PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, A. Nixon, $1.

Any other variety:
1st, E. L. Lewis, Chinese Giant, $3; 2d, A. Low, Chinese Giant, $2; 3d, W. Warburton, Ruby King, $1.

CULINARY HERBS, GREEN.—Collection, named:
1st, W. Warburton, $5; 2d, A. Nixon, $4.

Gratuities:—

W. Heustis & Son,	Collection,	$5.
E. L. Lewis,	"	$5.
A. F. Coolidge,	"	$3.
A. Low,	"	$3.
C. W. Parker,	"	$3.
Goodell Farm,	"	$2.
G. D. Moore,	"	$2.
Mrs. E. M. Gill,	"	$1.
N. W. T. Knott,	"	$1.
W. Wheeler,	"	$1.

Mr. Simmons, New Seedling Potato, Simmons' Model, First Class Certificate of Merit.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Special Prizes.

CELERY.—Eight roots, commercial grown:
1st, A. Nixon, A Silver Medal; 2d, W. Heustis & Son, A Bronze Medal.

Regular Prizes.

PARSNIPS.—Twelve specimens of Long Smooth:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
Hollow Crown:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.
SALSIFY.—Twelve specimens:
1st, V. Frost, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.
CUCUMBERS.—Pair:
1st, W. C. Winter, $3.
CABBAGES.—Three Red, trimmed:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, G. F. Pierce, $1.
CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, E. R. Teele, $2; 3d, C. M. Handley, $1.
CELERY.—Four roots:
1st, W. H. Heustis & Son, $3; 2d, A. Nixon, $2; 3d, W. Warburton, $1.
ENDIVE.—Four specimens:
1st, A. Nixon, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, G. D. Moore, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.
CORN.—Yellow or field, twenty-five ears, traced:
1st, Goodell Farm, $3; 2d, C. Scully, $2; 3d, E. M. Bruce, $1.
TOMATOES.—Twelve specimens, grown under glass:
1st, Mrs. F. L. Ames, $3; 2d, Mrs. F. L. Ames, $2.

Gratuities:—

A. Low, Turnips, $1.
Mrs. J. Lewis, Onions, $1.
N. T. Kidder, Scotch Kale, $1.
W. Heustis & Son, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
N. W. T. Knott, " $1.

Warren Howard Heustis,
Varnum Frost,
Walter Russell,
Aaron Low,
George D. Moore,
Joshua C. Stone,
Michael Sullivan.
} *Committee on Vegetables.*

Patten & Co.'s Carnation House, Tewksbury, Mass.

REPORT

OF THE

COMMITTEE ON GARDENS.

FOR THE YEAR 1902.

By PATRICK NORTON, Chairman.

The past year has been full of activity for this committee and we are very much pleased to observe more care manifested in all the departments of the horticulture we have been called upon to inspect.

The season has been quite remarkable for its coolness, yet vegetation was more than a week in advance of last year, making a change necessary to an earlier date of some of the exhibitions.

Patten & Co.'s Carnation House, Tewksbury.

The first place that we were called upon to visit was the Messrs. Patten & Co.'s house of carnations at Tewksbury, on February 13.

The house was two hundred and fifty feet long by twenty-one feet wide and was filled with the very best plants to be had, splendidly grown and profusely bloomed.

We noticed some very fine seedlings of their own production and their ambition seems to be to cultivate only the best kinds whether originated by others or by themselves.

The house was in fine order, the plants very vigorous and splendidly flowered on very long stems. Their method of growing carnations is to be commended. At our request Mr. M. A. Patten has kindly furnished the following notes on the subject.

PATRICK NORTON, ESQ., *Chairman Committee on Gardens.*

DEAR SIR:—To write upon the subject "How we grow Carnations" seems superfluous, after the quantity of carnation literature imposed on the gardening fraternity the past few years.

Our method is practically the same as used by most growers.

In January, February, or March, healthy side shoots on the flowering stem are rooted in a temperature of 50 degrees overhead and about 10 degrees more in the sand, and when rooted we put them in small pots, and repot into a larger size when necessary.

Some are kept to plant on the benches for inside growing. The rest are planted out the last of May on land that has been well manured and well worked over, in rows about eighteen inches apart, eight to ten inches in the row, according as the variety is a large or small grower. A sprinkling of bone is a good tonic. Keep the weeds down and cultivate once a week. Top the plants when the flower shoots begin to push up. Inside culture is practically the same—good ventilation and plenty of spraying, to keep down the red spider.

In August we plant the outside grown carnations in the greenhouse, shading if necessary a few days. They should be supported as soon as planted to keep them from falling over when syringing. Give them all the air they will stand. After they are well established we discontinue watering overhead. Disbudding should be attended to as the plants grow. Night temperature should be fifty to fifty-five degrees, according to the variety and the day temperature about fifteen degrees higher.

Our flowers are cut the day before shipment and placed in a cool room.

The houses are fumigated every week or ten days, for which we prefer aphis punk.

M. A. PATTEN.

TEWKSBURY, MASS.
March 13, 1903.

MRS. DAVID NEVINS' ESTATE, METHUEN.

On May 28 we visited the residence of Mrs. David Nevins at Methuen. The old homestead had been reconstructed and we

were received into what appeared to be a new house with all the modern conveniences. The grounds about the house were made beautiful by the grouping of handsome shrubbery and flowering plants and the general aspect of the place reflected good taste in the arrangements of a very comfortable home. Mrs. Nevins, being a very active woman, is constantly improving her estate by bringing yearly large parcels of realty under more intense cultivation than it ever had previously, thus expanding her domain and at the same time beautifying the town.

George D. Moore's Cucumber House and Vegetable Garden, Arlington.

The next visit was on June 18 to George D. Moore's at Arlington to inspect a house of cucumbers and a vegetable garden.

It was evident that Mr. Moore and his son keep up their reputation in growing vegetables whether under glass or in the open ground, for the results of good cultivation were evident to the most casual observer. The liberal use of fertilizers and the knowledge of how and when to apply them were manifest in the copious crops displayed on this occasion. The Moore's method of cultivation is to be commended. His system of driven wells is a complete success, giving him all the water for irrigation and other purposes he can consume.

Hon. E. S. Converse's Estate, Malden.

The fourth visit was to the fine old estate of the Hon. E. S. Converse at Malden on July 16, to inspect a house of grapes as grown by D. F. Roy, head gardener. The house contained sixteen vines each bearing from twelve to fifteen bunches of grapes. The vines are now ten years old and Mr. Roy's method of renewal is to take up a new shoot from near the base of the old vine and when large enough to "go alone," cut away the old vine. This will give him in a short time new young vines throughout the house.

The whole estate is in a very satisfactory condition forming a connecting link between the old style gardening and the new. The old-fashioned plants which have become endeared to their

owners by many years of association are judiciously planted with the newer developments in horticulture and they make the combination very pleasing.

Greycourt, the Estate of Charles H. Tenney, Methuen.

The fifth visit this year was on June 27 to Greycourt, the beautiful estate of Mr. Charles H. Tenney at Methuen. The elegance of this estate might be taken as a model for any gentleman about to make a home for himself. It comprises every convenience and luxury that can be incorporated into any estate and these comforts are so judiciously planned as to make the place "a thing of beauty and a joy forever." Our visit this spring was more particularly to see the unfolding of the trees after their winter's sleep. Nothing could be more beautiful to the lover of nature than the new growth on all the rare shrubs, trees and conifers. The blue spruces and firs were wonderfully handsome in their new clothes and excited praise from all who had the pleasure of viewing them.

Mr. Tenney's object seems to have been, in building so beautiful an estate, to give himself the satisfaction of owning a "paradise on earth" to which he can invite his friends to enjoy with him every luxury, both within doors and without, which money can buy. It is so beautifully arranged as to be commended by all who visit Greycourt. This estate is entered for the Hunnewell Triennial Premiums.

Miss E. Jackson Clark's Estate, Pomfret, Conn.

The sixth visit this year occurred on July 23, to La Plaisance, the estate of Miss E. Jackson Clark at Pomfret, Connecticut, to inspect houses of grapes and fruits as grown by John Ash, the superintendent of the estate.

The grape house contains eighteen vines of five varieties, remarkably well fruited, with bunches averaging about four pounds each, highly colored, and luscious to the taste. The estate comprises about eighty acres, sixty acres of which are used for farming and garden purposes, while about twenty acres adjoining the mansion

house are used for lawn and ornamental planting of rare trees and shrubs. The fruit house contains peaches and nectarines of no less than seven different varieties of the best of these luscious fruits. Other glass structures are devoted to growing melons, tomatoes, cucumbers, and ornamental plants, including sixteen hundred chrysanthemums. The estate is replete with everything to make it a desirable and sumptuous home. Mr. Ash furnished this committee with a letter which is appended hereto, showing his method of procedure in growing such fine grapes; also a photograph showing the results attained; all of which we submit to other growers for their perusal and observation.

The Culture of Hot House Grapes by John Ash.

I enclose photograph of part of my house of grapes entered for competition. The dimensions of house are as follows:—Thirty-three feet long by twenty-five feet wide; roof curvilinear. In it I have planted four vines of Muscat of Alexandria, four of Gros Maroc, two of Lady Downs, four of Gros Guillaume, and four of Black Alicante. The house was built and one year old vines planted in 1897, so that my vines are now six years old and they have been fruited four years. The border is an inside one, so that I have absolute control of giving freely or withholding water as the vines may require.

This house is my second or late house, and I usually commence operations, for starting vines into growth, about February 20th, by putting on a gentle artificial heat maintaining a temperature of from 45° to 48° at night, with a rise of five degrees by day when artificial heat is required, allowing the sun heat to run up to 80° with ventilators opened slightly, continuing this temperature until the buds show signs of life when I raised the temperature ten degrees admitting air on every bright day, carefully avoiding cold draught on young and tender foliage, which "young leaves" appear in two or three weeks after buds show signs of life. At this time I raise to my maximum temperature of 65° nights and 70° by day artificial heat; sun heat from 80° to 88° with a free circulation of air on every favorable occasion.

Syringing.

Vines are syringed freely morning and afternoon on all bright days until they are in bloom when syringing is discontinued and a drier atmosphere maintained, only sprinkling floor about noon on bright days, until fruits are set, when we again syringe freely until grapes commence coloring, when we cease putting any water on foliage or fruits.

Watering and Feeding.

The border is given a thorough soaking with tepid water when first heat is introduced, and again as soon as bunches show themselves. Then after grapes have been thinned, weak liquid manure is given to help to swell up the berries and continued as the border may require until grapes show color, when we cease giving any more liquid manure, and use only clear water, until fruits are ripe, when water is given only in sufficient quantities to prevent shriveling of berries, and a drier atmosphere maintained, with abundant air on all favorable occasions.

Mrs J. C. Whitin's Estate, Whitinsville.

On August 1, the committee visited the estate of Mrs. J. C. Whitin at Whitinsville, to inspect a house of foreign grapes and a house of other fruits as grown by Wm. McAllister, head gardener on the estate. The grape houses are two in number but the one we were called to inspect contained ten vines six years old averaging about twenty bunches to each vine. The varieties consisted of Grizzly Frontignan, Lady Downs, Muscat of Alexandria, Mrs. Pearson, Mrs. Prince, Black Alicante, Muscat Hamburg, Wethersfield Court, and Golden Queen. The bunches were well colored and the fruit was of luscious quality, but the bunches would have been larger if the vines had not been allowed to carry so many of them.

The fruit house was a great surprise to the committee, as it was of the most approved construction and contained the most splendid collection of fruit ever seen by the committee. The house was a span roof running east and west with a walk down the

Grape House of Miss E. Jackson Clark, Pomfret, Conn.

centre with trellises on each side across the house with peaches and nectarines trained espalier to each, and heavily fruited. Between the trellises stood forty pots of fruit, also well filled with peaches, etc.

Some of the peaches we measured were three inches in diameter and of perfect quality. It is with great pleasure that we award to this fruit house the first special prize offered by Edward Hatch for fruit houses.

This house was so exceptionally fine that we cannot endorse too much its construction and method of planting and fruiting, and as a slight token of our appreciation we award it the Silver Medal of the Massachusetts Horticultural Society.

We are pleased to add to this report a statement from William McAllister on the culture of hothouse fruits.

The Fruit-house of Mrs. J. C. Whitin, Whitinsville, Massachusetts, was built in the summer of 1900, size 164x25 feet. It is heated with hot water, two inch wrought iron pipes used. The house is an even span running east and west and trellises put across that the trees may get the full benefit of the sun. Trees are much easier taken care of than where they are trained up the roof; especially when syringing, a person can get at both sides of the trees without any trouble.

In this house are planted twenty-two trees on trellises and forty in pots. One third of these are nectarines, our preference being peaches. We think the best varieties are Royal George, Barrington, Noblesse, Crimson Galande, Early Silver, Princess of Wales, Sea Eagle, Elberta, Alexander Noblesse, Golden Eagle, and for nectarines, Cardinal, Early Rivers, Milton, Lord Napier, Newton, Pine Apple, Rivers Orange, and Victoria. These are good varieties of nectarines and need the same treatment as the peach. This house was planted the first week in November. We believe in planting in the autumn as soon as the trees shed their leaves. Our time for pruning is usually in January, and allow them to start to grow in February, having them flower by the end of March or the first week in April with fruit in July. The temperature must be kept rather low, not over 45° at night at first, increasing temperature as they advance in growth.

The soil used for the borders is a turfy loam from good pasture land. In this way I have had very good results.

WILLIAM MCALLISTER.

H. H. ROGERS' ESTATE, FAIRHAVEN.

This estate is entered for the Hunnewell Triennial premiums and this was our second visit. The general character of the estate is the same as last year although a considerable plot of ground had been reclaimed and brought under cultivation. The estate consists of about thirty acres which is nearly all level land with a portion in forest. On this Mr. Garthley, the gardener, is yearly encroaching and bringing it into such shape as to grow flowers and flowering shrubs.

The estate has all the electric power needed to light the buildings, the grounds, and run all the machinery needed to carry on a large establishment. Mr. Rogers' last work in beautifying the town of Fairhaven is the building of an elegant and costly church edifice for the use of one of the religious societies of the town. His benefactions to the town in building public edifices are truly wonderful and we are glad to note the public spirit he manifests.

We were invited to visit these buildings, which we did with great appreciation, and afterwards were driven all over the old whaling town of New Bedford and into its beautiful suburbs. A day of "restful pleasure" was enjoyed by the committee.

EDWARD J. MITTON'S CROTON HOUSE AT BROOKLINE.

On the 21st of August we were called upon to inspect a house entirely filled with crotons. This was a new experience for your committee as it is well known that crotons are cultivated entirely for their foliage. Mr. J. Lawson, the gardener, is particularly fond of these quaint plants and grows them to perfection.

The house contained eighty plants of about fifty varieties and their luxurious growth showed the high cultivation bestowed on them by the gardener. The colorings of the leaves were remarkable and the endless shapes of the foliage were still more so.

The house had no other plants therein, yet looked at as a whole it presented the appearance of a house filled with endless varieties of flowering plants in full bloom.

It was a remarkable house and once seen will long be remembered.

J. B. Lawrence's Dahlia Farm, Abington.

On the 9th of September we visited the dahlia farm of Mr. and Mrs. Lawrence which consisted of one hundred varieties of dahlias and two thousand plants. They were of the best kinds, were in full bloom, and made a grand appearance. Some of the best were named as follows:

King of the Cactus,	Mrs. Gladstone,	Frank Smith,
Maid of Kent,	Henry Patchett,	Grand Duke,
Nero,	Lucy Faucett,	Catharine,
Mrs. Dexter,	John Lamont,	Fernleaf Beauty,
Dr. Kirtland,	White Swan,	Meteor,
Fanny Purchase,	Livoni,	Mrs. Snow.
Wm. Agnew,	Alice Emily,	

William P. Lothrop's Dahlia Farm, East Bridgewater.

Mr. Lothrop's farm, consisting of six acres of dahlias, was inspected by your committee on the 16th of September and then it was in full bloom. There were over 25,000 plants, comprising over 100 varieties, and each variety was planted by itself. The great show of brilliant color and variety of shapes made a gorgeous spectacle. One portion of the garden was made to grow dwarf plants, by judicious pruning; other parts were left to grow naturally supported by stakes.

Mr. Lothrop has kindly prepared at the request of the Garden Committee the following notes on the dahlia and its cultivation.

Mr. Patrick Norton, Dorchester, Mass.

My first interest in dahlias was aroused in 1893 when I bought one dozen for my own pleasure.

There were supposed to be twelve named varieties and I looked forward with pleasure to the blooming season; but when it arrived I found that my attention had been lavished on a collection containing three inferior kinds.

The season following I bought eighty-eight varieties from various American seedsmen and found these almost wholly unsatisfactory.

I immediately decided that the majority of American dahlias were second rate or less; also that there was a market here for the finer kinds.

Before the next spring a partnership was formed under the firm name of Lothrop & Higgins for the purpose of establishing a dahlia specialty business.

That year we imported varieties from England, Holland, and Germany, and were very successful, finding the demand far greater than our ability to supply. Since then we have continually searched Europe for new and better kinds and have been amply rewarded by an unprecedented success at the New England and New York exhibitions.

In the autumn of 1901 Mr. Higgins retired from the firm.

All through the rapid growth of the business I have found that the increase in the number of my imported varieties has been more than paralleled by an increase in public interest, and in the demand for the newer kinds.

In regard to flower shows, I wish to say that the fact of these exhibitions being public educators was never more evident than since dahlias commenced to rise in popularity. I have obtained varieties in Germany to test, in lots of one or two of a kind, and have been so pleased with some special bloom that I exhibited it at the Mass. Hort. Society; before the time for planting arrived the next spring I had received orders and inquiries for this variety from six states.

In addition to importing I have obtained several new ones by scientific crossing; the most remarkable instance is the result of a cross between the Grand Duke Alexis and A. D. Livoni, the progeny in plant, shows all the traits of the G. D. Alexis, also in the shape and size of the bloom, but this has the true pink color of the A. D. Livoni.

In regard to planting: Here in New England the proper time is from May 15th to June 10th.

It must be understood of course that this is not for *early* blooms but for *best* blooms. If one desires smaller flowers and a greater

Dahlia Farm of Wm. P. Lothrop, East Bridgewater, Mass.

A field of "Perle de la tête d'Or."

quantity he should plant by May 15, nipping every bud which appears before August 1st. By this time the plant will have attained its full growth and its whole energy will be thrown into blooming.

The single stem branching system offers the best and prettiest method of culture. It is as follows:

One shoot only is allowed to grow. When the shoot has two pairs of leaves and an undeveloped growth on the top, it is pinched back as far as the upper leaves. Four branches will then start, one at each leaf. When the plant is grown it will have a short, strong, single stem, which comes only an inch or two above ground, and four long branches which are strong enough to hold themselves up without stakes, giving the plant a neat bushy appearance.

If planted between the two dates, as first suggested, they will reach flowering size at about the proper time. There are, however, a few kinds which should invariably be staked; such as Frank Smith, Beatrice (cactus), Grand Duke Alexis, Dr. J. P. Kirtland, Ernest Glasse, etc.

In regard to fertilizer: I plan to change each year; one year using barn manure; another prepared fertilizer; the next raw chemicals, such as nitrate of soda or muriate of potash.

My experience has taught me that the kind and amount of fertilizer used are not of as great moment as is the cultural care.

Just as soon as the last tuber is covered I commence to cultivate and continue doing this each week and sometimes twice a week until the blooming season arrives. The last few times using a fine twelve-tooth cultivator. I then give the second hoeing which is also the final one. In this way the ground is left as fine and smooth as a garden.

Regarding storage: The tubers are lifted immediately after the first killing frost, dried in the field three or four hours and laid in a dark shed. When all are dug they are separated and all packed in dry sand in a cellar which ranges in temperature from 38 to 42 degrees.

W. P. Lothrop.

East Bridgewater, Mass.

Greycourt, the Summer Home of Charles H. Tenney, Methuen.

On October seventh your committee was called upon to make their third year's call at this beautiful home, thus completing the time of entry for the H. H. Hunnewell Triennial Premiums.

The more we see of this place the better we like it and we can now more fully recommend it as a model of perfection to gentlemen about to build homes to live in. In the spring time the trees, just showing their new growth, were beautiful, but in the fall they had put on the still more beautiful appearance of maturity, winding up the season with all the colors with which nature's alchemy could endow them.

They were noble trees and everyone a splendid specimen of its kind with plenty of space in which to expand and develop. The President of our Society walked all over the place one morning in October and when asked his opinion of it he replied that it was "the noblest place in the Commonwealth," and this only confirms the judgment of your committee.

Mr. Tenney is always beautifying his estate and his last endeavor is the completion of a splendid bowling green where the noble and manly sport can be enjoyed on a gentleman's estate. His inclination seems to lead him in the direction of building such structures as will beautify the estate and at the same time contribute to the pleasures of his numerous guests.

We take sincere pleasure in awarding this estate the H. H. Hunnewell Triennial Premium.

Mr. Tenney has had in his employ ever since he began to improve this estate a faithful and enthusiastic gardener, Mr. Gall, who has carried out in a masterful way all the instructions and plans for beautifying these grounds; and how well he has done his work the estate as it stands today speaks for itself.

Mrs. A. W. Spencer's Chrysanthemum House, South Framingham.

On the 30th of October we visited the estate of Mrs. A. W. Spencer, at South Framingham, to inspect a house of chrysanthe-

mums planted on benches. There were three hundred and fifty plants of thirty varieties of the best kinds grown. These were all grown for one flower each and presented a beautiful appearance. Alex McKay the gardener, also had in other houses four hundred and thirty-five plants in pots which were fully as handsome blooms as those on benches, and he likes to grow them in pots because they are so easily moved to make room for other incoming plants. Mr. McKay is to be commended for his proficiency in growing the Queen of Autumn.

Hon. E. S. Converse's Estate, Malden.

The last visit of the season was on the 4th of November to inspect two houses of chrysanthemums, one grown on benches and the other house filled with large plants, interspersed with fine foliage plants, to produce a fine effect.

The house planted on benches contained five hundred plants of one hundred and sixty varieties, well flowered, and presented a fine appearance. The great number of varieties added very materially to the attraction.

The house of chrysanthemums arranged for effect with other plants was an unqualified success and Mr. D. F. Roy had occasion to feel elated at the success of his endeavors.

The house was beautifully arranged and its beauty was enhanced by having so many standard chrysanthemums to break up the otherwise monotonous appearance of the low-growing plants. We commend Mr. Roy's good taste and proficiency in growing and arranging chrysanthemums.

Mr. Roy has sent us the accompanying notes on the cultivation of the chrysanthemum which will add to the value of this report.

Mr. Patrick Norton.

Dear Sir:—In answer to yours of the 26th instant I would say that we propagate our chrysanthemums, for growing on benches, the last week in April. When they are well rooted we put them in two and one-half (2½) inch pots using loam, leaf-soil, and sand; then we plunge the pots in ashes in a cold frame, which gives us short-jointed stocky, plants. About the second

week in June we plant in benches, using a rich compost consisting of sod cow manure and bone meal. As the soil in this locality is rather light we add one load of clay to every three of loam. When planting we firm the soil well around the plant, leaving a hollow around each one for water. We are very careful about watering until the plants get hold of the soil. Then they take more water but we never allow the soil to be saturated. About the first week in August we give a mulch of well-rotted cow manure which keeps the roots cool and acts as a fertilizer. During the hot months we syringe three times a day.

We feed with liquid manure when in our judgment the plants require it, using sheep, cow, and horse manure at intervals. Commercial fertilizers we use very sparingly: possibly a dressing of Clay's and a dose of nitrate of soda, a few times during the season. The night temperature is kept between 50° and 60°. When the blossoms begin to open we use shading made of light cloth.

The foregoing remarks practically cover our mode of cultivating the Queen of Autumn.

Yours truly,

D. F. Roy.

Malden, Mass.

The Prizes and Gratuities awarded this year are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:

First, Charles H. Tenney $160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums, arranged for effect with other plants:

First, Hon. E. S. Converse 30 00

For the best house or houses of Chrysanthemums grown on benches:

First, Hon. E. S. Converse 30 00

Second, Mrs. A. W. Spencer 20 00

Special Prizes offered by Edward Hatch.

For the best Fruit House, plants grown in pots or tubs included:	
First, Mrs J. C. Whitin	$30 00
Second, Miss E. J. Clark	20 00

Society's Prizes.

For the best House of Foreign Grapes:	
First, Miss E. J. Clark	30 00
Second, Mrs. J. C. Whitin	20 00
For the best House of Carnations:	
First, Patten & Company	30 00
For the best Vegetable Garden:	
First, George D. Moore	30 00
For the best House of Cucumbers:	
First, George D. Moore	30 00

Gratuities.

Hon. E. S. Converse, House of Grapes	20 00
E. J. Mitton, House of Crotons	25 00
J. B. Lawrence, Dahlia Farm	15 00

William P. Lothrop, Dahlia Farm, a Silver Gilt Medal.

Miss E. J. Clark, Superior Cultivation of Grapes, a Silver Medal.

Mrs. J. C. Whitin, Superior Cultivation of Nectarines and Peaches, a Silver Medal.

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
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J. H. WOODFORD,
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Committee on Gardens.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums

FOR THE YEAR 1902.

By HENRY LINCOLN CLAPP, Chairman.

Weeding. — George Putnam School Garden.

The experience in gardening obtained during the summers of 1900 and 1901 made it evident that a smaller number of beds of larger dimensions would give more satisfactory results. The beds (3½ by 10 ft.) were too small to furnish employment to the young gardeners except for a very short period.

Perhaps the gardeners had put their beds in perfect order after school hours during the previous afternoons, and could find no work to do when the afternoon (Monday) appointed for gardening came. Then, naturally enough for children, they found

Making beds on rough plowed land. — George Putnam School Garden.

something to do that was not on the school program. Hoes were put to very singular uses in the short absences of the director, lumps of earth took wings, and foot-prints of human beings made intaglios in the soft earth of the beds. These misplaced impressions were observed with a good deal of solemnity by the director and aberrant gardeners. The latter always appeared to know more about planting seeds than planting footsteps, probably from the fact that the former is done so deliberately and the latter so precipitately.

Under these natural conditions eighty pupils seemed a rather generous number for one pair of eyes which were of the ordinary

wide-angled species, but, nevertheless, could take in only about one quadrant at a time.

Moreover, a much greater variety of plants can be raised on a large bed than on a small one. This makes the work far more interesting. The produce of a large bed amounts to something; it will make some show on the dinner table. The work seems more like real work and less like play work.

Accordingly the beds were cut down to forty, each 8 by 10 ft. This was done in a very simple manner. The path between each pair of old beds was dug up and leveled up by the addition of soil in such a manner as to unite the two beds into one large one. No new paths had to be made.

Seedlings in May. — George Putnam School Garden.

The forty pupils who were selected to cultivate the beds were much more interested and far steadier than the eighty who had worked the year before. They could be left to work without an overseer. They considered their work as the real thing. They raised immense parsnips, summer squashes, radishes, lettuce, carrots, beets, beans, corn, kohl-rabi, etc., besides a greater variety of flowering plants.

The janitor frequently found them at work until six o'clock P. M. and even later, and on Saturdays also. Some kept their

gardens in fine order during the summer vacation, though they had no director to direct and encourage them.

One day in October two photographers and a reporter from the office of the "Boston Globe" came out to photograph and write an account of the garden. Each pupil was asked to state what he had raised. Three pictures were taken and they appeared afterward in the "Globe." One represented a boy with an arm load of huge parsnips which he carried home to eat.

Monday, October 27, the pupils scraped up bushels of leaves that had fallen from the ash and maple trees growing about the school grounds and added them to the weeds and vegetable rubbish of their gardens.

Weeds for the fire. — George Putnam School Garden.

Then the director set fire to one heap placed in the centre of one bed, and soon the fire was carried to other heaps until there were a score of small fires sending off flames and volumes of

smoke. Then there was hurrying and scurrying to get more leaves to keep the fires going, and there was a scene of activity that is seen on the premises only once a year. The result was the conversion of an immense amount of rubbish into ashes with which the beds will be fertilized, not to speak of the admirable exercise and exhilaration of mind attending the whole work. Quite different from book learning.

Lining out beds. — George Putnam School Garden.

It is a difficult matter for many pupils to keep their beds in line because they stick so closely to their own beds and view them from so short a range. They are repeatedly directed to go some distance away from their own beds and then compare their edges with those of other gardens. Pupils from twelve to fifteen years of age do not know what "sighting" means until they are taught in the garden.

November 3 the paths were straightened and November 10 the bulbs were planted. Advice had been previously given as to the most satisfactory bloomers, the best bulbs for the money spent, the manner of planting,— depth, distance apart, preparation of soil, etc.

Visitation Day. — George Putnam School Garden.

Weeding after School. — George Putnam School Garden.

Some pupils worked till dark; some carted in dressing on Saturday; and all worked hard without being conscious of it. It is the bodily action that quickens the mental and makes garden work suitable for and enjoyable to children.

SUCCESSES AND FAILURES.

The gardens established by the National Cash Register Company, Hartford School of Horticulture, Twentieth Century Club

of this city and Hyannis State Normal School are all in a flourishing condition because they have a good financial backing.

The gardens in Medford, Wenham, Trenton, and Louisville, Kentucky, I have reason to believe, have failed, and mainly, in my opinion, because they did not have adequate financial support. The George Putnam School garden seems to be the only one without outside aid that is still carried on.

It is interesting to learn that Mr. Philip Emerson, Principal of the Cobbet School, Lynn, Mass., has started a school garden, which it is expected will be entered next summer for one of the school garden prizes offered by this Society.

ADEQUATE SUPPORT OF SCHOOL GARDENS.

School gardens should be supported as other institutions of learning are supported, if good results are expected. No doubt, the school garden in the beginning may be worked with much enthusiasm, partly because it is a novel and reasonable undertaking; but hard work which only entails money obligations to a considerable amount soon diminishes the enthusiasm of both teachers and pupils. To work your passage and pay, too, soon comes to border on drudgery.

Simply to put seed into the ground expecting nature to do the rest in producing a handsome crop is expecting too much. There are fertilizers, seeds, tools and perhaps young plants to be bought every year. To leave the garden to take care of itself three months in summer is not the way to ensure fine crops in autumn. Continuous care of plants is necessary; and the only way to provide for that is to employ a director and pay him for directing. Premiums for the best results would also promote the work. This is the way the Dayton boys' gardens are carried on so successfully. So the ideal summer school, or vacation school, might be found in a school garden.

But weeds do not make much progress in a single night, and to hoe a small bed every day would be quite unnecessary. Other opportunities for the children's activities must be furnished—swings, teeter boards, ladders, sand piles, vaulting bars, etc.,—all of which the Massachusetts Civic League has provided in their establishment on Columbus Avenue, Boston.

Here is an opportunity for any enterprising Society to do a great work in cultivating horticultural tastes in children and at the same time win an enviable reputation for service of the greatest importance. The opportunity has been seized already. It is not repeating too much to say again that the National Cash Register Company, Twentieth Century Club, Massachusetts Civic League, Hyannis State Normal School, and Hartford School of Horticulture are paying all the expenses of gardens from year to year. So all the advantages of school gardens will be sure to be made manifest by these Societies or schools.

It would be quite proper for any well-endowed Society to undertake a similar work,—the actual support of a school garden to a successful result. A hundred dollars a year would do it. Probably fifty dollars would suffice where a garden has been made on land free of cost.

At present this Society on a small amount of money (this year $60) is doing as much as can be done, offering premiums and printing and circulating reports. But school gardens established by means of the encouragement of these premiums, without other means of support cannot endure. They cannot live on reports, however spicy and well illustrated they may be. They never should be expected to be self-supporting.

Imagination is quite unable to picture the progress that would be made in horticulture and agriculture in Massachusetts in a few years, if a few thousand dollars a year were devoted to the support of school gardens where the culture of flowers, vegetables and fruits, large and small, might be practiced. This kind of seed ought to be planted, and those who really desire to do the very best service are planting it.

The honors that should be ours should not go to others simply on account of inadvertence, if there is no other reason.

The words of Ex-President Appleton on the occasion of the dedication of the new Horticultural Hall, "the encouragement of window gardening and school gardens is a most commendable feature of our work," should mean something substantial on which practical work can be founded and sustained. In fact, Massachusetts should take up the work.

HALIFAX, N. S., HOME GARDENS.

August 27, 1902, Mr. A. H. McKay, Superintendent of Schools in Halifax, N. S., called upon me and stated that the children of that city have been induced to make and cultivate gardens at their homes, for the reason that they will be likely to take better care of their home gardens than school gardens during the summer vacation, and they can suit their own convenience in working in them. Moreover, they will not be required to walk any distance worth mentioning and water will always be available, which is a very important matter in maintaining a garden successfully.

As previously intimated, the most serious drawback in the conduct of school gardens is their general neglect during the summer vacation, unless a director is employed to meet the children regularly, or substantial money prizes are offered for the best gardens.

A grant of money by the city of Halifax ensures the establishment and maintenance of the children's home gardens. That is an example worth following by the city of Boston or any other that would be in the front rank of educational and civilizing processes. The matter should not be left to be undertaken and carried through by clubs and private individuals.

President Eliot says work is the greatest civilizer, and there is no better work for children than that found in a school garden or a garden at home. The school garden is, perhaps, more educative while the children are going to school, because the reasons for results are given while the plants are growing; theory and practice are properly connected. In the home garden explanations are largely wanting, provision for success or failure is far less certain, and what is learned comes more circuitously and therefore more slowly.

HOME GARDENS IN ST. LOUIS.

The Sunday "Post-Dispatch" of St. Louis in 1902 offered thirteen prizes for home gardens made by children under sixteen years of age. Two hundred seventy-one children entered the contest. The Englemann Botanical Club furnished flower seeds at two cents a package, and many packages were sold.

The report says, "Ash heaps, back yards, bare spots of dark unsightly soil have been converted into exquisite flower beds and nice grassy lawns. Hideous board fences have been transformed

into beautiful emerald walls. Never in the history of St. Louis have so many flowers adorned its yards. The sick in the various hospitals have been cheered by the flowers, churches and homes have been decorated with them, and hundreds of friends of the children have shared the beauty and fragrance of the little flower gardens. The children have learned to know and care for flowers and have a better understanding of nature. They have changed many a humdrum yard and many a faded street into the dignity of a lawn or a beautiful thoroughfare.

The good effects are far-reaching in that hundreds who did not enter the contest were induced to make special efforts for home improvement."

A committee of three awarded the prizes: — Mr. H. C. Irish, assistant director of the Missouri Botanical Garden, Miss Isabel Mulford, a former teacher of botany in Vassar College and Mr. W. J. Stevens, principal of the Pope School. Mr. Stevens originated the plan by which Carthage, Mo., was made the most beautiful city in Missouri. Evidently these people consider that their time, skill and efforts are well spent in inducing children to make gardens at home and take care of them.

The prizes consisted of gold coins,— $20 for the first, $10 for the second, $5 for the third, and $1 each for the others taken in the order of merit. There were two contestants for the third prize so nearly alike in merit that $5 was awarded to each. The total awards amounted to $50.

It is worthy of notice that this work was carried out by a paper company, not by a horticultural society that might be naturally expected to favor gardening.

GARDENS OF THE MASSACHUSETTS CIVIC LEAGUE.

An admirable enterprise for the education and amusement of poor children during the school vacation has been inaugurated by the Massachusetts Civic League, Boston, Mass.

There is a large area of land on Columbus Avenue fitted up with all sorts of apparatus for the exercise and amusement of children— swings, teeter boards, sliding poles, sand piles, ladders, spaces for playing base ball, lawn tennis, croquet, etc., and a full corps of directors of games.

But especial mention should be made of 350 children's gardens, 110 of them being on Columbus Avenue. The beds are about 3½ by 6 feet in area and all together contain a great variety of garden vegetables and flowers. Some are neatly outlined with small rounded stones whitewashed. At four o'clock each afternoon the children who choose to do so come to water the gardens; and those belonging to absentees get just as much water as any others. The children appear to be delighted to use the watering pots: and some in their ardor wet themselves.

Children's Gardens, Massachusetts Civic League, Boston.

One little miss of ten told me that when she first received her garden she "got all wet in front." Then she continued, "The fence was all painted too, and I leaned up against it, like this, and got paint all over my dress. When I went home my mother said I must go to bed for making my dress look so. So I went to bed and staid about five minutes, and then got up and went out on the front doorsteps to play."

"Did your mother know when you went out?" I asked.

"No," she replied.

Naturally enough the gardens show various degrees of success, and give no evidence of being molested by marauders. As I went into the grounds I saw two girls, about seven years old, rather better dressed than most of the children, picking flowers, of which they had quite a little bunch apiece. "Is that your bed?" I asked. "No," said one of the girls, "It belongs to a girl whom I

Watering.—Massachusetts Civic League Gardens, Boston.

know." "What is her name," I continued. She replied, "I can't think of it just now, but I know her when I see her."

The young lady who has charge of the garden work keeps a record of the condition of the beds, and neglect of a bed results in its loss, and another child gets it.

Something besides gardening is taught — patience, forbearance, respect for the rights of others, respect for labor, neighborly assistance, with the thoughts of doing as much as possible, instead

of as little, which seems to be the animating principle in this age of strikes. No doubt the children will get over their unselfishness later on, but they are started aright.

My camera to a good degree will make up for the inadequacy of my words in describing these gardens.

Watering. — Massachusetts Civic League Gardens, Boston.

WEST INDIAN SCHOOL GARDENS.

The school garden movement has reached Jamaica and other islands of the West Indies.

The last number of "The West Indian Bulletin" devotes considerable space to the subject of school gardens, and clearly shows how estimable an educational means the school garden is thought to be in the West Indian Islands.

Among the many wise and suggestive remarks made are these: "School gardens and school plots are now a recognized feature in many of the West Indian Islands." "Object lessons in country schools should tend to produce a taste for work and study out of doors. All good object teaching should give the scholars something to do with their hands."

Several plans of gardens and schemes of work in actual operation are given. The first scheme is carried out by a village school of one hundred and eighteen pupils with one head teacher and three assistants. The second employs one hundred pupils in a rural district. Each plot is thirteen feet square and is planted with a good variety of vegetables. The third makes provision for one hundred and twenty pupils under the charge of three certificated masters. Plants, insect and other animal life are carefully elaborated in the scheme and as carefully worked out by the children. The boys of this school collected, dried and mounted over two hundred different species of wild flowers.

The fourth is the most elaborate scheme of all, and is worked out by one hundred and twenty pupils under the instruction of a master and two assistants in the town of Kent.

The course is really scientific and includes the study of air, seeds, soils, weeds, grasses, shoots and roots by means of nicely contrived apparatus in doors in inclement weather and much observation and work out of doors in pleasant weather.

This is a very meagre summary of the article, but it shows clearly enough that Massachusetts can look to the West Indian Islands with profit as regards cultivating in children a taste for horticulture and country life. And the government is doing it. The government of Massachusetts is doing practically nothing about it, but is still hammering away on curricula that point the children pretty straight to a shop of some kind.

In a previous number of "The West Indian Bulletin," Vol. 3, No. 2, 1902, is this mention of one school garden:

"In one of the most successful schools, Mount Fletcher in St. Andrew, I am informed that the school children beg for seeds and cuttings to take home, and that not only are flowers eagerly sought after to cultivate but considerable quantities of vegetables are now raised locally and either consumed or sent to the Kingston market. The grant of £8.7s given in this instance is undoubtedly money well spent. The school garden is well worth a visit from any one who is interested in the development of agriculture amongst the people." The sales of the produce of this garden amounted to twenty-five dollars.

It will be noticed that the expenses exceeded the receipts by about fifteen dollars; in other words the garden was not self-

supporting; and the gentleman who reported on school garden work in Jamaica mentioned the deficiency with a tone of regret. What school ever is self-supporting in the short run? It is the result of instruction in the long run that shows that schools pay. If it cost forty dollars to instruct forty children in garden work during one summer, no doubt the value of the instruction outweighed the cost.

The Barbados "Agricultural News," January 3, 1903, says: "School gardens are rapidly becoming recognized features of the educational work in several of the colonies. The time is approaching when every child in the West Indies will be enabled to learn practically the principles underlying agriculture."

ARTICLES AND LECTURES ON SCHOOL GARDENS.

"Current Literature" for November, 1902, contained a two-column article on school gardens, summarized from another article written by Mr. Dick J. Crosby in the "Outlook." In speaking of school garden work the editor says, "It is the kind of hard work that takes children out of doors and makes them feel like whistling, and no amount of such work ever makes nervous wrecks.

"The school garden should be found in connection with every kindergarten. The little fellows learning to recognize colors and geometrical forms should see the more pleasing natural colors and forms. They should be given an opportunity to see how the plant gets out of the seed, how the stem pushes upward and the little leaves turn green, while the white root pushes down into the soil. They should plant a few seeds for themselves, and then water and care for the plants when they come up. Thus will they learn and love to learn; thus will they get out in the pure air and sunshine."

Mr. George Henry Knight of New York has written several very readable articles on school gardens, and is now preparing another.

Dr. F. M. Powell of Glenwood, Iowa, has a strong article on that same subject in the Transactions of the Iowa Horticultural Society, now in our library.

Dr. Helen C. Putnam of Providence wrote several articles for the "Boston Transcript" which were afterwards put into pamphlet form. She made a very strong plea for the establishment of school gardens.

Mr. Dick J. Crosby of the Agricultural Department at Washington has prepared a stereopticon lecture on the subject.

Mr. H. D. Hemenway, Director of the Hartford School of Horticulture, is doing the same.

I have made eighty slides, a part of which were shown at a meeting of the Boston Society of Natural History last winter, and shall show all of them at a meeting of the Rhode Island Horticultural Society in Sayles Hall, Brown University, Wednesday, February 18, 1903.

Mr. Samuel B. Greene, Professor of Horticulture and Forestry, University of Minnesota, writes me: "We are trying to do something of the sort in this section and want to get all the helpful data we can bearing on the subject. If your report for 1901 has been issued, I would like very much to get a copy of it, and would like to know if you have any collection of photographs on this subject that we could obtain. We shall be glad to take care of any expense incident to obtaining this matter."

From this I presume that he will prepare an illustrated lecture. I sent him a number of reports and magazine articles treating of the matter.

Our secretary informs me that he has many more calls for school garden reports than for all the other reports of this Society combined.

A long and valuable list of articles on school gardens written by prominent persons will be found on page 249. I am glad to know that such prominent and influential people do not esteem the school garden propaganda beneath their dignity, nor unworthy of their time and studious attention. They realize that children will be men and women one of these days, and what their tastes for or against horticulture may be is a matter of considerable concern, not only as regards their own happiness and usefulness but as regards the progress of horticulture itself.

It ought to be a cause for great rejoicing that a new way has been found for interesting and educating city-bred children by raising plants, wild or cultivated. Any horticultural society might well rejoice every time it induces a single person, man or boy, woman or girl, to get possession "of a little farm well tilled," though it be nothing more than a bed eight by ten feet.

WOMEN AS GARDENERS.

Rumored Movement to Start New Department at Wellesley.

(Post, November 17, 1902.)

Wellesley, November 16.—Wellesley College, ever on the move toward the goal of progression, has in contemplation, according to friends of the college, a movement to install a new department of learning for women, namely, that of gardening.

While this may be somewhat of a novelty to Americans, there is nothing wonderful about it in England, where such an institution for female education has been established for the past fifteen years, and hundreds of successful graduates turned out.

The promoters of the new idea at Wellesley claim that no other female institution of learning in America has better advantages and facilities to conduct such a department, and as an argument point to their own spacious grounds and the splendid property and hothouses on the Hunnewell estate, famed the whole world over.

The Horticultural College at Swanley, Eng., covers all departments of farming except that of cattle. Women who hold graduates' certificates from it know the science of farming in the flower garden, in the vegetable garden and in the orchards, and, besides, what few graduates of ordinary agricultural colleges have any experience in, the manual labor of all kinds of horticultural work. They can hoe and spade when they have finished their work courses as well as any farm hand. Instruction is given, too, in the conduct of a dairy, the raising of bees and of chickens; in short, they learn in a few years what most men farmers who go to school to mother nature spend their lives in learning.

GIRLS STUDYING FARMING.

More than fifty girls are studying scientific farming in the Minneapolis College of Agriculture. The course they take includes botany, chemistry, physics and geology, requiring in the first two years two terms of each. They pay special attention to cooking, laundering, household economics, furnishing houses and social culture. They learn to plan buildings and to lay out grounds. By this means it is hoped that farmers can be provided with wives who will know enough about making life in the country attractive to keep the boys from emigrating to the towns and cities.

PLANT STUDY IN WASHINGTON, D. C.

Through the influence of Professor Galloway, of the United States Department of Agriculture, a plot of ground one hundred and fifty feet square, or a little more than half an acre, and a greenhouse have been secured for the purpose of instructing the pupils of the Washington Normal School in the common operations of plant propagation, such as making cuttings and placing them in sand to root; then potting and taking care of the young plants. They are to have all the facilities for studying botany, such as the grass gardens, the economic and medicinal plants, the fine collection of native and exotic shrubs and trees and a magnificent collection of herbarium specimens. If this work proves successful its scope will be enlarged.

There is an idea in Washington that instruction on the theory and practice of plant growth will in some way find a place in the common schools of the country; and so the Normal School girls are being prepared to give that instruction.

The work proposed was outlined in the "Boston Sunday Journal," January 4, 1903, in a three column article illustrated by four photographic reproductions.

Miss Sipe, the science teacher of the Washington Normal School, has charge of the work.

LIST OF ARTICLES PUBLISHED ON SCHOOL GARDENS.

Arranged in Chronological Order. Compiled by Mr. H. D. Hemenway.

1890.

"Horticultural Education for Children," by Henry L. Clapp, Principal of George Putnam School, Roxbury. Transactions of Massachusetts Horticultural Society for the year 1890.

1891 to 1902.

Report of the Committee on School Gardens and Children's Herbariums of the Massachusetts Horticultural Society, by Henry L. Clapp, Chairman, Boston, Mass.

1898.

"School Gardens," by Henry L. Clapp. Published in "Appleton's Science Monthly," February.

Teachers' Manual for Elementary and High Schools. First Edition.

State of Nevada, Carson City, J. G. McCarthy, Superintendent. "Nature Study." Page 81.

Report of the Board of Trustees of Public Schools of the District of Columbia. Superintendent of Schools, Washington, D. C. "Vacation Schools." Page 49.

1899.

Report of the Commissioners appointed by the Legislature to Investigate and Report upon the Methods of Procedure in This and Other States and Countries in giving Instruction in Manual Training and in the Theory and Art of Agriculture in the Public Schools. L. D. Hart, Commissioner, Madison, Wis.

Chapter 33. "Methods of Instruction in Agriculture," U. S. Bureau of Education. Pamphlet.

Chapter 6. "Education in Central Europe." U. S. Bureau of Education. Pamphlet.

National Cash Register Company. Published in "Outdoor Art and Beautiful House Edition," June, Dayton, Ohio.

"School Gardens," by F. M. Powell, M. D., Glenwood, Ia. Read at the Iowa State Horticultural Society, Des Moines, Ia. Report.

Chapter 34. Extracts from Consular Report, U. S. Bureau of Education. Pamphlet.

Government Reports: Chap. 20. "School Gardens." U. S. Bureau of Education.

1900.

"School Gardens," by U. S. Bureau of Education. Washington, D. C. Bulletin.

"The Physician's Influence in Vacation Schools," by Helen C. Putnam, M. D. Reprinted from the Bulletin of the American Academy of Medicine. Pamphlet.

"Flower Gardens in Public Schools," by Jessie M. Good. Published in "How to Grow Flowers," The Floral Publishing Company, Springfield, Ohio.

Annual Report of the Superintendent of Education of the Public Schools of Nova Scotia, Halifax, Nova Scotia. "School Gardens." Page 27.

1901.

"School Gardens," by Henry Lincoln Clapp, Master George Putnam School, Roxbury, Mass. Reprinted from "Education," May. Also reprinted in pamphlet form.

Chapter 27. Consular Reports, U. S. Bureau of Education. Pamphlet.

Chapter 15. "Public Playgrounds and Vacation Schools," U. S. Bureau of Education. Pamphlet.

"Agriculture and Rural Life in Public Schools," by Willet M. Hays, Professor of Agriculture, University of Minnesota, St. Anthony Park, Minnesota. Bulletin.

Manual of School Law, Nova Scotia. Committee of Public Works and Mines, Halifax, Nova Scotia. Page 66.

"Farming in the City." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Self-Help for Those Who Can't Work in the Usual Business." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Manual Training in Public Schools." Reprinted from a report of the Ontario Educational Association, by Professor James W. Robertson, Ottawa, Canada. Page 15, "The Rural Schools."

"Report, Rules and Regulations adopted by the Park Commission, Dayton, Ohio, also Hints, Suggestions on Street and Decorative Planting, Maintenance of Trees, Shrubs, Lawns, etc."

Report of "Home Gardening Association," Cleveland, Ohio, by E. W. Haines, President.

"Home Gardening Association," Cleveland, Ohio. Report.

1902.

"A Public School Garden," by Henry Lincoln Clapp. Published in "New England Magazine," June.

Report of the School Garden Session of the American Park and Outdoor Art Association, including the following papers: "The School Garden as a Phase of Industrial Work," by W. A. Baldwin, Principal of the State Normal School at Hyannis, Mass. "Boston Sand Gardens," by Miss Ellen M. Tower of Lexington, Mass. "The School Gardens at the School of Horticulture," by H. D. Hemenway, Director

of the School of Horticulture, Hartford, Conn. "The National Cash Register Boys' Gardens," by George A. Townsend, Jr., of Dayton, Ohio. "Some Neglected Millions," by Mr. Knight, New York City. "How We Reach Eighteen Thousand School Children in New York," by Professor John W. Spencer of the Bureau of Nature Study at Cornell, University. "Nature Study for Children," by George F. Powell, Director of the School of Horticulture at Briar Cliff Manor, New York.

"The Hand Book for Planning and Planting Small Home Grounds," by Warren H. Manning. Published by the Stout Manual Training School, Menomonie, Wis.

Annual Distribution for Prizes for Outdoor Art and Landscape Gardening. Published by National Cash Register Company, June, Dayton, Ohio.

"The School Garden." Published by State Normal School, Hyannis, Mass., Hyannis, Mass. Catalogue and Circular.

"Efforts of the Pupils of the Public Schools for Home and Public Improvement," by Carthage, Mo., Public Schools, March 1.

"Two Foreign Schools and Their Suggestions," by Daniel S. Sanford. Published in "New England Magazine," May, 1133 Broadway, N. Y.

Prizes awarded to the Sunday Post-Dispatch Gardeners. Published in "St. Louis Post-Dispatch," Sept. 28, St. Louis, Mo.

"The School Garden." Published in "The Evening Star," Oct. 18, Washington, D. C.

"The Child Farmers of New York," by Louise Seymour Houghton. Published in "Christian Work and Evangelist," Oct. 25, New York City.

"The Country School and the Country Child," by O. J. Kern, County Superintendent of Schools, Rockford, Ill. Published in "School News," September, October, and November, Taylorville and Chicago, Ill.

"School Gardens, Their Devolopment and Functions," by Dick J. Crosby, Office of Experiment Stations, U. S. Department Agriculture. Published in "Outlook," August. With references.

"The Whittier School Garden." Published in "The Southern

Workman," of November. Published by Hampton Inst. Press.

"School Gardens at the School of Horticulture, Hartford, Conn.," by H. D. Hemenway, Director of the School of Horticulture. Read before Boston Meeting of the American Park and Outdoor Art Association. Published in "Park and Cemetery," September, 324 Dearborn St., Chicago, Ill.

"Boys Trained for Citizenship." Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Garden Movement for Schools," by Dick J. Crosby, Office of Experiment Stations, U. S. Department of Agriculture. Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Farming Industry in the United States." Published in "The World To-day," September, 153-155 LaSalle St., Chicago, Ill.

"School Gardening in the Boston Normal School." Published in "Modern Methods," April, New England Publishing Co., Boston and Chicago.

Second Annual Report of the Vacation School Committee, Hartford, Conn.

"A Story of Home Gardens," by Starr Cadwallader, Cleveland, Ohio, Pamphlet.

"The National Cash Register Company." Published in "Social Service" for January. Published at 287 Fourth Avenue, New York City.

Dates not Ascertained.

Reports issued by the National Cash Register Company of Dayton, Ohio.

Bulletins Nos. 62 and 71 of the Deparment of Agriculture of State of Pennsylvania.

"Hampton Nature Study Leaflet No. 7." Published by Hampton Institute Press, Hampton, Va.

"Suggestions for Progressive and Correlative Nature Study," by G. M. Carver, Tuskegee Normal and Industrial Institute, Tuskegee, Ala.

Fifty-first Missouri Report of Public Schools, W. F. Carrington, State Superintendent, Jefferson City, Mo. "Nature Study."

Bulletins Nos. 121, 160, 205 of the Horticultural Division of Cornell University, Agriculture Experiment Station, Ithaca, N. Y.

Fifty-second Annual Report of the Public Schools of the City of Worcester, Mass. Superintendent of Schools, Worcester, Mass. "Nature Study and Garden Work." Page 48.

"The Country School and the Country Child." Winnebago County, Ill. Report.

Report of a visit to the Centralized Schools of Ohio, by O. J. Kern, County Superintendent of Schools, Rockford, Winnebago County, Ill.

"How to Beautify Carthage," by L. E. Archias Seed Company, 113-115 Main St., Carthage, Mo. Pamphlet.

Manual of Elementary Course of Study for the Common Schools of Wisconsin. L. D. Harvey, State Superintendent. "Nature Lessons." Page 89.

LIST OF PERSONS ACTIVELY ENGAGED OR INTERESTED IN CHILDREN'S GARDEN WORK.

Charles A. Allen, Secretary The Associated Charities, Dayton, Ohio.

William A. Baldwin, Principal Hyannis State Normal School, Hyannis, Mass.

Robert Barton, Principal Eliot School, 4250 Grove St., St. Louis, Mo.

W. D. Chamberlain, Vice-President The Beaver Soap Company, Dayton, Ohio.

Henry L. Clapp, Principal George Putnam School, Roxbury, Mass.

Dick J. Crosby, Office of Experiment Stations, Washington, D. C.

Mary C. Dickinson, Rhode Island Normal School, Providence, R.I.

The Edgemont Improvement Association, Dayton, Ohio.

L. D. Hart, Commissioner, Madison, Wis.

W. J. Hawkins, Principal of Irving School, 3829 North 25th St., St. Louis, Mo.

Professor Willet M. Hays, University of Minnesota, St. Anthony Park, Minn.

J. E. Higgins, City Supervisor of Agriculture, Honolulu, Hawaii.

Mrs. Horace B. Hooker, 837 St. Paul St., Rochester, N. Y.

Mrs. Alice Hungerford, Old Orchard, Missouri.
Iowa State Horticultural Society, Des Moines, Ia.
Frederic H. Kennard, Landscape Architect, 85 Devonshire St., Boston, Mass.
A. H. Mackay, Superintendent of Education, Halifax, N. S.
Massachusetts Horticultural Society, Boston, Mass.
Mrs. Henry Parsons, 22 West 44th St,, New York City, N. Y.
George P. Phenix, Principal State Normal School, Willimantic, Conn.
Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa.
George P. Powell, Director School of Practical Agriculture, Briar Cliff, Manor, N. Y.
Dr. H. C. Putnam, 127 Angel St., Providence, R. I.
Charles H. Ramsdell, Menomonie, Wis.
C. G. Rathman, Garfield School, Jefferson Avenue and Wyoming Street, St. Louis, Missouri.
Raymond Riordon, Greenleaf School, Washington, D. C.
Professor James W. Robertson, Commissioner of Agriculture, Ottawa, Canada.
E. G. Routzhn, 1 Sunset Avenue, Dayton, Ohio.
Professor John W. Spencer, Ithaca, N. Y.
W. J. Stevens, Principal Pope School, St. Louis, Mo.
Miss Ellen M. Tower, Lexington, Mass.
George A. Townsend, Jr., National Cash Register Company, Dayton, Ohio.
F. A. Verpeauch, South Manchester, Conn.
Miss Dora Williams, Boston Normal School, Boston, Mass.

CHILDREN'S HERBARIUMS.

The quality of the children's herbarium work was quite equal to that of previous years. Nothing better than Dorothy Metcalf's and Dorothea Clapp's collection has been seen in our exhibitions. To quote from the "Transcript" notice: "Many of the specimens retain the original colors of the flowers to a degree of artistic as well as of botanical interest, as for example, the sabbatias, wood lilies, irises, sunflowers, roses, mallows, stargrass, cardinal flower and pickerel weed."

Many of the leaf sprays included the fruit of the tree and covered the sheets well. The fern specimens were large and complete as shown by the pictures.

In short, the quality of these collections especially was so good that the Committee decided to purchase quite a number of specimens as the nucleus of a botanical collection to be placed in the herbarium room for ready reference. The need of such a reference herbarium has been felt every year during the preparation of the exhibition and the naming of unnamed specimens.

And the fact that specimens may be considered worthy of being bought and added to the Society's herbarium will, no doubt, have a tendency to improve the quality of the work of every exhibitor; so that it is confidently expected that a useful and beautiful collection will be formed in the course of time.

Christmas Fern. Spiny-Shield Fern.
Dorothy Metcalf's Herbarium.

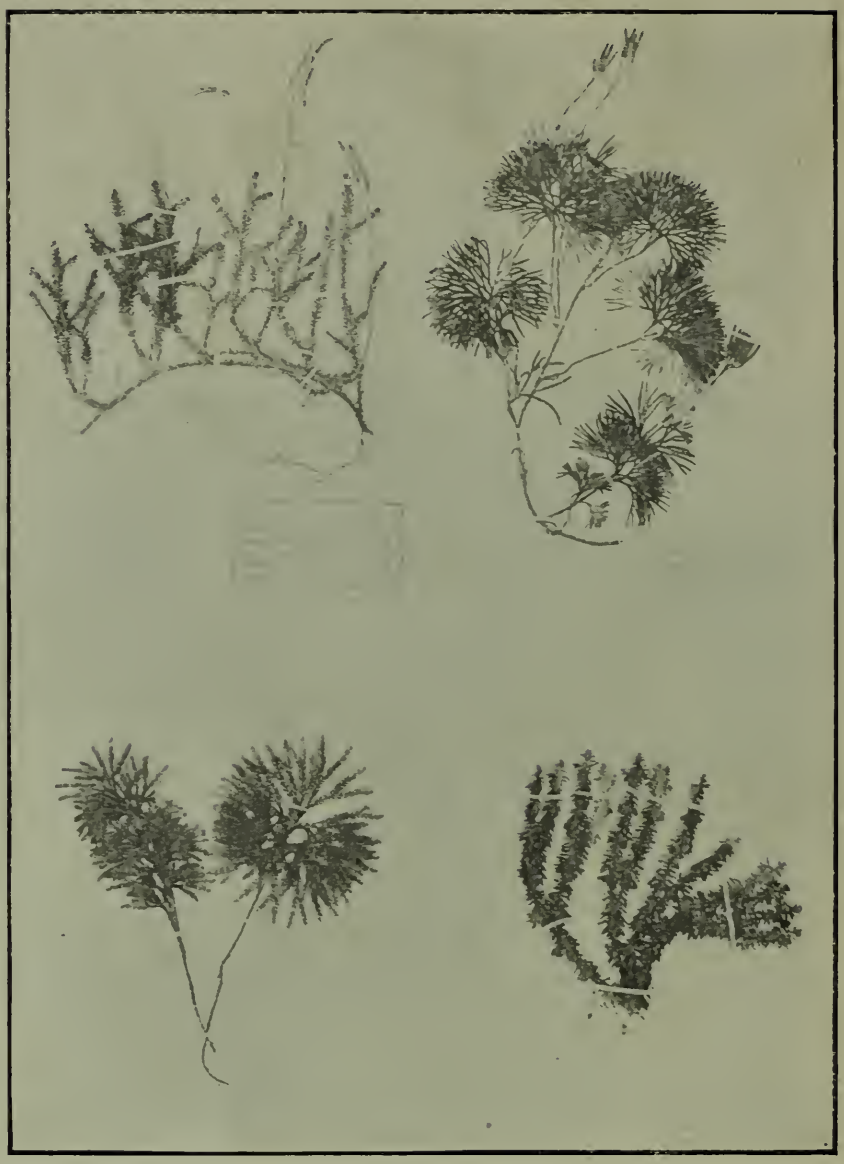
The exhibition of fifty-four mosses correctly named by Christine Dudley Clapp was a new and valuable feature of this year's exhibition. Mosses are difficult things to determine anyway, and when the Society induces a school girl only sixteen years old to

study up so well so difficult a subject as that of mosses and get together so fine a collection, it has done something of which it may well be proud. Such a starter as this frequently goes through the life and sweetens it continually.

The opportunity of putting such a collection on exhibition for hundreds of people to see, botanists included, is a great one, and it is hoped that more will take advantage of it, until mosses become as well known as flowering plants.

Maidenhair Fern. Phegopteris hexagonoptera.
Dorothy Metcalf's Herbarium.

Two members of this Society who have long been interested in mosses and have done very careful work in naming and exhibiting them examined this collection with evident pleasure, and disabilities of long continuance were forgotten in the added pleasure of the hour. This is surely one instance of sweetening the life to which reference has been made. And may there be many more!



Lycopodium clavatum. Lycopodium complanatum.
Lycopodium dendroideum. Lycopodium lucidulum.
Olive L. French's Herbarium.

Then there was another unusual exhibit, Miss Olive L. French's collection of lycopodiums, of which four are illustrated. This bringing together the different species of a genus for comparison is of great educational value. Agassiz declared there was only one proper method of study—the "*compariteef*"—and Miss Olive L. French has it.

Grass Pink. Large Blue Flag.
Linden. White Oak.
Dorothy Metcalf's Herbarium.

As noted in previous years, the family interest was shown again this year. The two Clapp girls exhibited specimens, and their small brother, Dudley, entered for the first time. There were three Swain boys, two Morss boys and two French girls among the exhibitors.

John Murdoch, Jr., now in Harvard College, exhibited over eighty new plants this year, although his contributions in previous years all told amounted to nearly six hundred different species.

Although only eighteen years old he is already a good botanist, thanks to the opportunities and encouragements offered here. On account of his botanical knowledge he graduated from the Roxbury Latin School with extra high marks, the writer being present on the occasion.

LEARNING TO INVESTIGATE.

The children of the Ira Allen Primary School, Boston, have been induced to find every different species of plant that grows in the adjoining field, and it is expected that the results of similar work next year will appear among the children's herbariums exhibited in our hall.

That is a phase of plant work which we have not noticed before among small children; and we shall be glad to encourage the thorough investigation of a certain area, no matter how limited, which was Darwin's characteristic way of working.

A GERMAN SCHOOL GARDEN.

A bit of the rock garden, Gera, Germany.

In Germany instruction on wild flowers and their cultivation is given quite as extensively as that on the kitchen garden. The botanic side of plants is considered quite as educative as the purely economic side.

The conditions for growing wild plants are much more varied than those for growing cultivated plants. There are wild plants that grow on Alpine heights, in watery marshes, deep woods, sand, cracks of rocks, and on other plants. The diverse conditions under which they grow furnishes a wide field of observation and learning.

A typical garden in furnishing varied conditions for growing over two thousand species of wild plants is located in Gera, Germany. Here all the children of the city come to observe and to receive instruction. It contains a spring from which flows a perennial stream.

The rock garden situated on an eminence is represented here by means of a reproduction from a photograph which I took in 1899. The area of the garden is a little less than an acre. A gardener and a director are regularly employed by the city to take care of it.

HORTICULTURE WITH NATIVE PLANTS.

Such gardens in Europe are very practical affairs. Our colleges have taught botany for many years, but not in the practical German method. However, if colleges all over the world have considered it of sufficient educational value to be entitled to a place in their curricula, there must certainly be such educational value in it as to command our respect and encouragement.

It is well to induce children to cultivate our native, hardy perennials as Mr. J. W. Manning, Rea Brothers, Mr. Horsford, Mrs. Wolcott and others have done. If they learn to love our native plants through their herbarium work no doubt some of them will desire to have them growing in their own gardens where they can see them easily and often.

Our public parks more and more are being adorned with our native plants and shrubs. One has only to walk through the Back Bay Fens, The Fenway, Franklin Park or the Arnold Arboretum to be convinced of that fact.

A large portion of our decorative plants grow wild somewhere,

and that fact is nothing against them. The Botanic Garden at Cambridge is a most lovely spot; and our native plants make it so. Just as fine are the botanic gardens in Europe which I have visited. They furnish the people with flower shows every day from early spring to late fall.

I have cultivated hardy perennials including asters, golden-rods, violets, ferns, wild bean, heleniums and others, far too numerous to mention, for more then a score of years, and they improve greatly under cultivation. I am sure that is horticulture. A great many men and women have done the same, and we desire the number should be increased, that their happiness may be made more certain.

Some seem to forget that happiness may be found in a garden regardless of the size of the flowers or their market value. To many the twin-flower is as pleasing as the rose, the mayflower as the dahlia, the violet as the chrysanthemum.

PRIZES AND GRATUITIES AWARDED FOR SCHOOL GARDENS AND CHILDREN'S HERBARIUMS.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00

CHILDREN'S HERBARIUMS, NOVEMBER 28 AND 29, 1902.

FLOWERING PLANTS.

Gratuities:—

Dorothy Metcalf, for eighty-five additions to one hundred . .	3 40
John Murdoch, Jr., for sixty-three additions to four hundred and twenty-four	2 75
Marion L. French, for thirty-six additions to one hundred and forty-five	96
Robert D. Morss, for thirty additions to one hundred and seventy-five	84
Edward L. Morss, for twenty-five additions to one hundred and twenty-five	66
Olive L. French, for eighteen additions to two hundred and ninety-two	42

Donald N. Swain, for thirteen additions to twenty-five	$ 35
Winthrop C. Swain, for three additions to eighty-five	04
FERNS AND FERN ALLIES.	
Gratuities:—	
Dorothy Metcalf, for thirty-one ferns and seven fern allies	5 70
Dudley Clapp, for thirty-one ferns	3 72
Sara E. Snell, for twenty-seven ferns	3 24
Olive L. French, for ten ferns and eight fern allies	2 34
Bessie R. Parmenter, for twelve ferns	1 20
SEDGES.	
Gratuities:—	
John Murdoch, Jr., for fourteen additions to sixty-eight	1 68
Winthrop C Swain, for seven specimens	40
GRASSES.	
Gratuities:—	
John Murdoch, Jr., for twelve additions to forty-eight	1 20
Olive L. French, for four additions to fifty	50
SPRAYS OF LEAVES.	
Gratuities:—	
Dorothea Clapp, for fifty-one additions to thirty	5 10
Charles D. Swain, for thirteen specimens	91
MOSSES.	
Gratuity:—	
Christine Dudley Clapp, for fifty-four specimens	5 00
Total for Gardens and Herbariums	$40 41

The amount of money appropriated by the Society for the use of the Committee was:

For Prizes and Gratuities	$125 00	
For Current Expenses	75 00	$200 00
The Committee has expended		59 02
Balance unexpended		$140 98

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
MRS. H. L. T. WOLCOTT, Dedham,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1902.

By CHARLES W. JENKS, Chairman.

Collections of native plants were exhibited on the five days arranged in the schedule and all were marked by good displays, in fine condition, and well arranged. The exhibits were often so nearly equal in excellence that it was not easy to call one better than another, and your committee frequently found it difficult to determine the order of the awards. The increase from three to five prizes has worked well, and the limiting of the number of specimens of each species to three has, perhaps, lessened the effect as a display, but has in no way interfered with the botanical interest of the exhibits, and has shown the desire of the committee, as far as in its power, to discourage the unnecessary destruction of our native plants.

On May 10 were shown the usual early spring flowers.

On June 6 to 8, among others, were *Cypripedium spectabile*, *C. pubescens*, *C. parviflora*, *C. acaule*, *Liparis liliifolia*, *Arethusa bulbosa*, *Pogonia verticillata*, *Conopholis Americana*, and *Botrychium simplex*.

On July 12 were noted with interest, *Lysimachia stricta* var. *producta*, *L. vulgaris*, *L. punctata*, *Gnaphalium purpureum*, *Oenothera biennis* var. *cruciata*, *Rhododendron maximum*, and *Lobelia Dortmanna*.

On July 19, for the prizes for native ferns, three collections were offered, and all were representatives of our native species and creditable to the exhibitors. While there were no rare specimens there were many of interest, among which may be mentioned the following: Mrs. Clark had an unusual form of *Asplenium Filix-foemina* with finely laciniate fronds somewhat resembling some of the English cut varieties; fine specimens of *Phegopteris hexagonoptera*, cultivated in garden; *Ophioglossum vulgatum*, called rare, but better described as common but rarely observed. Mr. C. C. Kingman exhibited four *Botrychiums*, *matricariæfolium*, *ternatum*, *ternatum* var. *dissectum*, and *Virginianum;* the form of *Onoclea* called *obtusilobata;* some peculiar forms of *Asplenium Filix-foemina;* and *Asplenium angustifolium* cultivated in garden. The Misses Doran had a collection neatly arranged and in fine condition in which was *Aspidium Goldianum* cultivated in garden, and a form which came close to *Aspidium cristatum* × *marginale*. Mr. George E. Davenport kindly assisted the committee and his thorough knowledge of the species was of great assistance to them.

There were no exhibits for the prizes offered for cultivated native plants.

On August 2 the Misses Robbins of Cambridge had an interesting exhibit of our common roadside plants and weeds. In the other collections were *Habenaria blephariglottis*, *H. orbiculata*, *H. tridentata*, *H. psycodes*, *H. lacera*, *H. ciliaris*, *Microstylis ophioglossoides*, *Monarda didyma*, *M. clinopodia*, *M. fistulosa*, var. *rubra*, *Utricularia inflata*, *U. purpurea*, *U. vulgaris*, *U. cornuta*, and *U. gibba*.

On September 11, the last prize day of the season, there were brought a large collection of asters and goldenrods, and some excellent specimens of native plant fruits of which Miss Mann exhibited twelve species.

The committee are well pleased with the exhibits offered and hope next season that there will be more plants shown on days when no prizes are offered, as was the custom formerly. These displays of native plants are a marked feature of our exhibitions and the interest felt in them is shown by the large number of per-

sons, both old and young, who gather around them to recognize an old acquaintance or to obtain the name of some new friend.

The committee, while not desiring to enter into the question of nomenclature, have felt that they should have some standard and for the present, as their rules for 1903 show, have decided on Gray's Manual.

PRIZES AWARDED FOR NATIVE PLANTS.

1902.

MAY 10.

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st, Mrs. W. S. Eager, $5; 2d, Mrs. Arthur Clark, $4; 3d, Miss R. L. Mann, $3.

JULY 12.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Misses E. A. and M. S. Doran, $4; 3d, Edward S. Colburn, $3; 4th, Miss R. L. Mann, $2.

JULY 19.

NATIVE FERNS. Collection of named species and varieties:

1st, Mrs. Arthur Clark, $6; 2d, C. C. Kingman, $5; 3d, Misses E. A. and M. S. Doran, $4.

AUGUST 2.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss R. L. Mann, $2; 5th, Edward S. Colburn, $1.

SEPTEMBER 11, 12, 13 AND 14.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Edward S. Colburn, $4; 3d, Mrs. W. S. Eager, $3; 4th, Miss R. L. Mann, $2; 5th, Misses E. A. and M. S. Doran, $1.

Appleton Silver Medal awarded to Mrs. Arthur Clark for the greatest number of first prizes for Native Plants.

Appleton Bronze Medal awarded to Mrs. W. S. Eager for the next greatest number of first prizes for Native Plants.

Amount appropriated for the use of the Committee		$175.00
Amount of Prizes	$83.00	
Cost of Medals	10.52	93.52
Balance unexpended		$81.48

CHARLES W. JENKS,
WILLIAM P. RICH,
MISS MARY RODMAN,
Committee on Native Plants.

REPORT

OF THE

COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT

FOR THE YEAR 1902.

By JAMES STURGIS PRAY, Secretary.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The principal work of the committee during the past year has been the carrying on of that referred to in our previous reports; namely,—the collecting, collating and tabulating of information regarding the distribution and condition of our roadside trees throughout the Commonwealth, with a view to publishing a report of these conditions, coupled with recommendations to the tree wardens and others having to do with the preservation and increase of the arboreal beauty of our roadsides. To this end we have again sent out copies of our original roadside circular, containing the series of specific inquiries, to all the tree wardens in the towns, and to the city foresters and others in the cities; and in this way have added substantially to the mass of statistical data already in hand. Meanwhile the arrangement of one part of this information has been finished, being divided under such heads as,—Record of replies; Work done; Condition of trees; Soils; Diseases and pests; Tree-guards; Effects of electric wires, gas,

and pavements; Placards; Noteworthy individual trees; Real estate values; Arbor Day; Work in the schools; Town by-laws; Inquiries; etc. The tabulation of the other part of our accumulated information is rapidly nearing completion, as is also the mapping of the latter in a way to indicate graphically the distribution of species. It was in connection with this latter work that reference was made in a previous report to the relation which the work of this committee had to that of the Division of Biological Survey of the United States Department of Agriculture. Although the Secretary of the committee, who has been carrying on this work, is no longer able to give to it so much time as heretofore, he hopes to be able to submit, in behalf of the committee, to the Society before spring, the long promised report on all the material, in order that it may be printed, if the Society shall see fit, in season for circulation to the tree wardens, members of the Society, and others, early in April.

Whatever value may come out of this report, the more important work for the committee has been the correspondence with the tree wardens and others, and the helping them constantly with information and advice; and the committee believes that this good work should not be allowed to lapse through any inadequacy of appropriations.

In this connection, it may be well to state, in view of possible misunderstanding, that our committee is in closest sympathetic relation with the Massachusetts Forestry Association. On the one hand, so far as it is plowing the same field, the two are coöperating, and there is more than ample field for both. On the other hand, a large share of the work of this committee is entirely distinct from and unlike anything that the Massachusetts Forestry Association has as yet undertaken. As an instance of the coöperation above referred to, and a proof of the value of the existence of a Committee on Forestry, separate from the Massachusetts Forestry Association, we may refer to the several occasions when a cause espoused in common by the two, has been supported at the State House by the representatives of both; a bill originating with the Massachusetts Forestry Association receiving proportionately more consideration by having the united support of that Association, this Society (through its committee), the Board of

Agriculture, and the Appalachian Mountain Club. It is often true, as has been conspicuously the case in the relations of our committee, that a number of independent but closely allied and coöperating organizations can, working together, wield a larger power than if united under one government.

In conclusion, we have only further to report at this time, and as additional instances of useful coöperation, that during the past year we have continued to use such opportunities as have offered for the distribution of the circulars of the Society for the Protection of Native Plants, and the American Park and Outdoor Art Association; and have taken part in the reception and entertainment of the latter Association on the occasion of its annual convention held last August in Boston, when the hospitality of our Society was so freely shown it.

Respectfully submitted for the Committee,

HARVEY N. SHEPARD, *Chairman*,
JAMES STURGIS PRAY, *Secretary*,
NATHANIEL S. SHALER,
HENRY S. HUNNEWELL,
J. WOODWARD MANNING,
Committee on Forestry and Roadside Improvement.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1902.

By JOSEPH H. WOODFORD, Chairman.

As the year draws to a close we can look back with considerable satisfaction at the result of our endeavors to make the exhibitions attractive and fully appreciated by the multitudes of people who have attended them.

The Schedule of Prizes called for about the same number of exhibitions as are usually held during the year and some of them have taxed the halls to their utmost capacity to contain them; and in some instances considerable ingenuity had to be resorted to to accommodate the great number of exhibitors.

The arrangements have been carefully planned and so well carried out that everything done by the committee has met with the approval of the exhibitors and has redounded to the credit of the Society.

We are much pleased with the copious notices of our exhibitions in the newspapers and now wish to thank the reporters for taking so much pains for the benefit of our Society. The appropriation placed to the credit of this committee for extraordinary expenses has been expended judiciously and for the best interests of our exhibitions.

The amounts received for admission fees to the three Shows, for which an entrance fee was charged, were as follows:

Spring Show, March	$771.00
Plant and Flower Show, September . . .	826.25
Chrysanthemum Show, November . . .	1,092.50
	$2,689.75

all of which is in the hands of the Treasurer.

Respectfully submitted,

JOSEPH H. WOODFORD,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
PATRICK NORTON,
ROBERT FARQUHAR,

Committee of Arrangements.

REPORT OF DELEGATE

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

When one visits the Hatch Experiment Station at Amherst, he really wonders if the farmers and gardeners of the Commonwealth realize the importance of the work carried on in their interests. There are trained professors whose daily business is special investigation in the various departments of agriculture and horticulture; in the latter we are, perhaps, more especially interested. The work is done on a scale of sufficient magnitude to present the subject in all practical ways, and the products are large enough to insure of keeping in prompt touch with the market quotations.

There the cultivator finds the meat of the nut cracked for him; there he can find the best apples, pears, peaches, plums, and small fruits of all kinds. The directing professor can give lists of the most profitable varieties for the market or for family use.

Last summer the Trustees of the College made a change in the horticultural professorship, Prof. F. A. Waugh taking the place of Prof. Maynard. We remember the latter pleasantly in connection with several lectures with which he has favored this Society, as well as his exhibitions of fruits in illustration of some of his experiments.

The Hatch Experiment Station is well worth what it costs the state and the nation for its support.

This has been a year of commemoration to the State Board of Agriculture, which was established in 1852, and consequently has now attained its semi-centennial, which was celebrated by a meeting in our Halls on July 22. Invitations were extended to all past and present members of the Board, also to the Governors of the New England States, and to the Secretary of the Department of Agriculture at Washington.

The venerable Ex-Governor Boutwell, who was in office at the time of the establishment of the Board, and who was one of its most cordial promotors, was present and addressed the meeting.

His Honor Lieut.-Governor Bates spoke for the Commonwealth, and a representative from the Department of Agriculture also spoke.

Dr. Goodell, President of the Agricultural College at Amherst, gave an exceedingly interesting historical address, and President O. B. Hadwen, of this Society, entertained the meeting with personal reminiscences of his membership in the Board.

The exercises closed with a collation in the smaller hall at which a large number participated.

WILLIAM H. SPOONER,
Delegate.

December 1, 1902.

REPORT OF THE INSPECTOR

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

To the State Board of Agriculture,

GENTLEMEN :—The duty you have assigned to me of inspection of exhibitions of the Massachusetts Horticultural Society is agreeable, and easy by comparison. There is indeed no comparison to make, as the high position of that Society in consequence of position in the state, and, indeed, in this nation, and beyond, is so elevated that what it has done, and is doing, can only be much praised. Comparisons with this Society can be best and only, perhaps, made with itself. Its management is acting under its existing rules of government, and the responsibility for keeping these rules in the most advanced condition has been placed by the state upon its members. The state gave it a Constitution in the Acts of Incorporation passed in the year 1829, and the power to make by-laws rests with the Society. It has done a noble work in the promotion of Massachusetts Horticulture; and it must succeed, and advance in wealth and horticultural promotion, so long as our citizens of wealth, and practical knowledge in matters given to its care, continue to have a united confidence that those sterling ideas which its founders held are unselfishly perpetuated.

We can safely record the facts that its several exhibitions within its new Halls, with its fine library accommodations adjoining, have deserved high commendation during the year.

FRANCIS H. APPLETON,

Inspector.

REPORT

OF THE

COMMITTEE ON LECTURES AND PUBLICATION

FOR THE YEAR 1902.

By AARON LOW, Chairman.

The Committee on Lectures and Publication presents the following summary of its work for 1902:

A course of nine lectures has been delivered, as follows:

January 11. The Brown-Tail Moth in Massachusetts. By A. H. Kirkland, M. S.

January 18. Horticultural Possibilities for New England Farms. By Prof. F. Wm. Rane.

January 25. The Business End of Horticulture. By Patrick O'Mara.

February 8. The Methods and Results of Soil Sterilization. By Prof. G. E. Stone.

February 15. Fungous Diseases of Fruits. By Prof. M. B. Waite.

March 8. The Influence of American Expositions on the Out-Door Arts. By Warren H. Manning.

March 15. The Evolution of Vegetable Culture during the last Forty Years. By Warren W. Rawson.

March 22. Birds and Insects in their Relation to Agriculture. By E. H. Forbush.

March 29. Some Famous Gardens of the World. By Miss Helena T. Goessmann.

The Schedule of Prizes for 1902 was issued January 17.

The Transactions for 1901, Part I, was issued July 1, and that for 1901, Part II, on October 27.

Part III of the Transactions for 1897 containing the accessions to the library for that year is now being printed.

Aaron Low,
James H. Bowditch,
E. W. Wood,
} *Committee.*

REPORT

OF THE

COMMITTEE ON THE LIBRARY

FOR THE YEAR 1902.

By WALTER S. PARKER, Chairman.

The Library Committee, in accordance with custom and the rules of the Society, respectfully submits the following report:

The committee desires to call the attention of every member of the Society to the beautiful and spacious rooms in which the library is now located. In many particulars they are all that could be desired, and especially is this true of the large, main hall. The light is excellent, the floor space ample, and the general architectural effect is very pleasing. It is a very fine room, withal, for a consulting library, and it seems unnecessary to add that it contains many rare and valuable books.

It is absolutely necessary, however, that some alterations be made in the large room, in order that it may meet the ends for which all libraries are instituted; namely,—first, the safe storage of books; second, a positive encouragement to the readers for the continued use of the books. Books are made for the purpose of being read and consulted, and every encouragement should be given to the patrons of the library. It is unfortunate that the shelves are all of uniform width (eight inches), and, in order to properly care for the large books and folios, it will be necessary to make some alterations.

Two methods have been considered by the Library Committee, either one of which will increase the efficiency of the library, and

make it of greater use to the members of the Society. In one plan it is proposed to enlarge the lower shelves by building out the cases, thus making a greater depth of shelf for the accommodation of the large books and folios. The architect has expressed the opinion that this can be done without injuring the present pleasing architectural effect. The Library Committee, after carefully considering the matter, is inclined to favor this plan.

The other plan mentioned, and considered somewhat, is to keep the cases and shelves as they are at present, and to construct low, double-faced cases, to be placed in the centre of each alcove, thus making them serve the double purpose of bookcase and table. This latter plan, we understand, was the original idea suggested when the arrangement of the library was first under consideration. It is in some ways better than the first plan mentioned, and, if adopted, will not change the present architectural effect of the room.

Your committee is emphatically of the opinion that no change should be made in the library without first consulting the architect, and getting plans which will harmonize with the general proportion of the present interior furnishings of the room. We earnestly hope that the financial condition of the Society will warrant the Executive Committee in granting such sums as will enable these changes to be made.

We are sorry to record the resignation of the former chairman of the Library Committee, Mr. William E. Endicott, a gentleman who, by education and natural endowments, was especially adapted to the work of the Society. He was widely read in many departments of horticulture and was practically engaged in the culture of various plants and shrubs on his home place, thereby making his judgment especially valuable in the selection of books for the library. He has served for twenty-three years as chairman of this committee and has done most excellent work for the Society, and it is with deep regret that we record his resignation.

We add herewith a list of the books worthy of special mention, received during the past year.

The seventh edition of Miller's Gardeners Dictionary; a 1517 edition of the Ortus Sanitatis; the first edition, 1664, of Evelyn's Sylva; Vol. II of the Botany of Captain Cook's Voyage; Delile's Flore D'Égypte (the botanical portion of Bonaparte's Égypte); Sanders' Orchid Guide (a useful reference book); American Gardens, by Lowell; Henderson's Picturesque Gardens; Gifford's Practical Forestry; Schwarz's Forest Trees and Forest Scenery; Charles Eliot, Landscape Gardener; Campbell's University Textbook of Botany; Britton's Manual of the Flora of the Northern States and Canada; Earle's Sun-dials and Roses of Yesterday.

Some of the books of a popular nature are Annie Oakes Huntington's Studies of Trees in Winter; the Handbook of the Trees of New England, by Dame and Brooks; a new edition of Frances Theodora Parsons' According to Season; F. Schuyler Mathews' Field Book of American Wild Flowers; Alice Lounsberry's Southern Wild Flowers and Trees; Cook's Trees and Shrubs for English Gardens; Jekyll and Mawley's Roses for English Gardens; Boyle's Woodlands Orchids; and Grout's Mosses with a Hand-lens.

We are glad to note the completion, after many years, of Pierre's Flore forestière de la Cochinchine, and Cesati, Passerini and Gibelli's Compendio della Flora Italiana. The concluding volumes of Professor Sargent's great work, The Silva of North America, have been received and also the fourth and last volume of Professor Bailey's Cyclopedia of American Horticulture. Besides these we have received continuations of Braithwaite's British Moss-Flora; Cogniaux and Goossen's Dictionnaire Iconographique des Orchidées; Collins, Holden and Setchell's Phycotheca Boreali-Americana; Flora Batava; Reichenbach's Icones Florae Germanicae et Helveticae; the second edition of Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz; Urban's Symbolae Antillanae; the Catalogue of Welwitsch's African Plants; Thiselton-Dyer's Flora of Tropical Africa; Hooker's Icones Plantarum; Bubani's Flora Pyrenaea; Triggs' Formal Gardens in England and Scotland; and Annals of the Royal Botanic Garden, Calcutta.

Monographia Aquifoliacearum, Part I, by Loesener; Monographia Loasacearum, by Urban; and Studien über die Gattung Platanus have been presented by the Kaiserlich-Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher, Halle.

WALTER S. PARKER,
GEORGE E. DAVENPORT,
CHARLES W. SWAN,
CHARLES W. JENKS,
T. OTIS FULLER,
Library Committee.

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1902.

The hand that for twenty-five consecutive years has prepared the Annual Report of the Secretary and Librarian has dropped its busy pen and the active brain that guided it has ceased its labor. Suddenly upon the morning of the seventeenth of February of the present year, Robert Manning was gathered into the harvest of the eternal years. In another place will be recorded a fitting tribute to his memory and a biographical sketch of his long and fruitful life.

Upon the death of Mr. Manning the duties of these offices were performed under the direction of Mr. Nathaniel T. Kidder, of the Executive Committee, until July first, at which time the present Secretary and Librarian was appointed.

Notwithstanding the vicissitudes of the year, work on the publications of the Society has been steadily maintained, with the result that Part I of the Transactions for 1901, which had been edited by Mr. Manning, has been issued, as well as Part II of the same year, mostly prepared by Miss Charlotte M. Endicott and Miss Mary C. Hewett, the efficient assistants in the library. Part I of 1902 is now being printed and will be ready for distribution at an early date.

Work on the long delayed Part III of the Transactions, comprising the accessions to the library, has been renewed and an effort will be made to bring these issues up to date as quickly as possible. Part III of 1897 is now in press. It is hoped in the

near future to incorporate the accessions with the current volumes of the Transactions, thereby discontinuing the third part, and rendering more promptly available the resources of the library.

While the valuable library of the Society is now handsomely established in its new and spacious halls, there remain some changes to be made in order that its usefulness may be increased and its accessibility rendered more convenient. Happily the problem of lack of shelf room which was for so many years the theme of discussion in this annual report has been now solved, but a new problem has arisen to take its place.

The work of final arrangement, the numbering of the shelves, and the cataloguing of the books have been greatly delayed by reason of the lack of proper shelving and the consequent uncertainty as to the disposition of the folios and quartos which constitute a large proportion of our volumes.

Fortunately, however, this problem is one of easier solution and a plan has already been adopted by the Library Committee by which this defect may be remedied. It is to be hoped that through the liberality of the Society the necessary means may be soon furnished whereby this improvement may be made and the library brought into a condition which its importance demands. The Librarian cannot too strongly urge the necessity of an early carrying into effect of this recommendation.

Through a special appropriation by the Society we have been enabled to add two new and improved card-catalogue cabinets, and a gift of $123.61 from the Building Committee will be expended for similar purposes, thereby adding to the convenience of all frequenters of the library.

Current standard publications of horticultural and botanical interest have been added to the library as promptly as possible and a partial list of some of the more noteworthy ones is appended to the report of the Library Committee. A collection of agricultural and horticultural books from the library of the late James F. C. Hyde has been presented by Mrs. Hyde and contains many desirable additions to the library.

While not as many books have been taken from the library as in some previous years, its use for the purposes of reference and special study appears to have increased, and inquiries by mail from correspondents throughout the country on questions and subjects of horticultural and botanical interest are frequently received. The Secretary and Librarian and his assistants are always ready to render the resources of the library as helpful as possible to all interested inquirers.

The list of horticultural, agricultural and botanical journals of the world's best publications has been fully maintained and with all these valuable advantages and with the beautiful, well-lighted and spacious library room it would seem that the library should be of even greater service in the future than it has been in the past.

WILLIAM P. RICH,
Secretary and Librarian.

TREASURER'S REPORT

FOR THE YEAR 1902.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1902.*

DR.

To amount paid on account of New Building . . .		$175 00
" " " for Furniture and Exhibition Ware . .		93 39
" " " " Library, appropriated by Society	$400 00	
" " " from income of J. S. Farlow Fund	127 49	
" " " from income of J. D. Williams French Fund . . .	200 75	
		728 24
" " " Interest on funds for Prizes, credited opposite		2,051 79
" " " L. J. Hunt, guardian		6,585 81
" " " for Heating	$1,651 68	
" " " " Lighting	699 96	
" " " " Water Rates	105 00	
" " " " Labor	2,627 48	
" " " " Stationery, Printing and Postage	2,042 46	
" " " " Insurance . . .	3,476 60	
" " " " Incidentals	1,017 75	
" " " " Repairs	201 55	
" " " " Committee of Arrangements,	300 00	
" " " " " on School Gardens and Children's Herbariums	18 61	
" " " " Committee on Lectures and Publications . . .	229 00	
Amounts carried forward . . .	$12,370 09	$9,634 23

Amounts brought forward	$12,370 09	$9,634 23
To amount paid for Committee on Forestry and Roadside Improvement .	$147 38	
" " " for Salaries of Treasurer, Secretary and Assistants . .	4,300 00	
" " " " Salaries of Committees .	1,043 00	
" " " " Tax on South Boston Property	139 12	
" " " " Electric Power . . .	348 15	
" " " " ⅔ Share of General Electric Stock	122 00	
" " " Alice M. Hobson, services in Library	75 01	
" " " for Legal Services . . .	100 00	
" " " American Park and Out-Door Art Association . .	100 00	
		18,744 75
" " " for Prizes awarded in 1901, viz.:		
H. H. Hunnewell, Triennial Prize . .	$160 00	
Prizes for Plants	1,287 50	
" " Flowers	1,039 02	
" " Fruit	653 00	
" " Vegetables	564 65	
" " Gardens and Greenhouses . .	415 00	
" " School Gardens and Children's Herbariums	83 75	
		4,202 92
		$32,581 90
Balance December 31, 1902		17,648 55
		$50,230 45

Cr

By Balance of account rendered December 31, 1901 . .		$26,481 72
" Received from Building in 1902, use of Halls,	$3,905 00	
" " " Annual Exhibitions, Gross . . . $2,689 75 Less Expenses, 1,700 65	989 10	
" " " Admissions and Assessments .	1,498 00	
" " " Mount Auburn Cemetery . .	3,307 90	
" " " State Bounty	600 00	
Amounts carried forward	$10,300 00	$26,481 72

Amounts brought forward		$10,300 00	$26,481 72
By Received from Sale of Transactions . .		3 50	
" " " Interest on Bonds .	$9,836 67		
" " " " " Stock .	610 00		
" " " " " Deposits in Bank . .	444 70		
	$10,891 37		
Less paid L. J. Hunt, Guardian,	448 93		
		10,442 44	
By Received from Estate of Benjamin H. Pierce, for Fund		800 00	
" " " Sale of ⅓ Share General Electric Stock		101 00	
" " " Edward Hatch, for Special Prize		50 00	
" Interest credited following Funds charged opposite:			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
H. H. Hunnewell " .	200 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	200 00		
Benjamin H. Pierce " .	9 07		
		2,051 79	
			23,748 73
			$50,230 45

CHAS. E. RICHARDSON,

Treasurer.

Approved:

WALTER HUNNEWELL,
ARTHUR F. ESTABROOK,
O. B. HADWEN,
} *Finance Committee.*

AUDITOR'S CERTIFICATE.

28 State Street, Boston, March 3d, 1903.

To the Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen :—In compliance with your request I made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1902, and herewith hand you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book and saw that all balances were correctly carried forward. I examined and checked the vouchers representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1903, to have been on hand, and also examined the securities of the Society in the custody of the Treasurer and found that they were in all instances in accordance with the requirements of the record. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1902, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of faithfulness upon the part of the Treasurer.

Yours very respectfully,

ANDREW STEWART,
Examiner of Accounts.

ASSETS AND LIABILITIES.

DECEMBER 31, 1902.

ASSETS.

Real Estate	$516,172 36	
Furniture and Exhibition Ware	8,250 54	
Library	41,301 62	
Stereotype Plates and Copies of History	246 50	
$1,000, Chicago, Burlington & Quincy, 7 % R. R. Bonds, Cost	1,000 00	
$2,000, Kansas City, Clinton & Springfield 5% R. R. Bonds, Cost	1,980 00	
$10,000, Lake Shore & Michigan Southern 3½ % R. R. Bonds, Cost	10,415 25	
$21,000, City of Newton 4 % Bonds, Cost	24,228 75	
$50,000, Atchison, Topeka & Santa Fe 4 % R. R. Bonds, Cost	44,693 25	
$50,000, Chicago, Burlington & Quincy, Nebraska Extension 4 % Bonds, Cost	50,012 50	
$10,000, Chicago & West Michigan 5 % R. R. Bonds, Cost	9,987 50	
$25,000, Kansas City, Fort Scott & Memphis 6 % Consols, Cost	27,523 75	
$50,000, Chicago, Burlington & Quincy, Illinois Division, 3½ % R. R. Bonds, Cost	51,625 00	
$8,000, Boston & Maine 4½ % R. R. Bonds, Cost	8,710 00	
$5,000, West End Street Ry. Co. 4½ % Bonds, Cost	5,162 50	
General Electric Co., 139 Shares of Stock, Cost	10,082 00	
W. A. Hayes & A. P. Loring, Trustees	3,488 76	
Cash	17,648 55	
		$832,528 83

LIABILITIES.

Prize and other Funds invested in Bonds:

Samuel Appleton	Fund,	$1,000 00	
John A. Lowell	"	1,000 00	
Theodore Lyman	"	11,000 00	
			$13,000 00
Amount carried forward			$13,000 00

Amount brought forward . . .			$13,000 00	
Josiah Bradlee	Fund	$1,000 00		
Benjamin V. French	"	500 00		
H. H. Hunnewell	"	4,000 00		
W. J. Walker	"	2,354 43		
Levi Whitcomb	"	500 00		
Benjamin B. Davis	"	500 00		
Marshall P. Wilder	"	1,000 00		
John Lewis Russell	"	1,000 00		
Francis Brown Hayes	"	10,000 00		
Henry A. Gane	"	1,000 00		
John S. Farlow	"	2,501 92		
J. D. Williams French	"	5,000 29		
Benjamin H. Pierce	"	800 00		
			$43,156 64	
Prizes for 1902 payable in 1903 . .			8,250 00	
				$ 51,406 64
Surplus				781,122 19
				$832,528 83

C. E. RICHARDSON,

Treasurer.

Membership of the Massachusetts Horticultural Society, December 31st, 1902.

Life Membership per last report	686		
Added in 1902	28		
Commuted from Annual	5		
		719	
Deceased		25	
			694
Annual Membership per last report	184		
Added in 1902	21		
		205	
Commuted to Life	5		
Deceased	3		
Resigned	1		
Dropped for non-payment for two years . .	7		
		16	
			189
Present Membership			883

INCOME FROM MEMBERSHIP.

28 new Life Members @ $30	$840 00
5 Commuted to Life @ $20	100 00
21 new Annual Members @ $10	210 00
Assessments	348 00
	$1,498 00

CHAS. E. RICHARDSON,
Treasurer.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery during the year ending December 31st, 1902.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same:			By Sales in January	$40 00	
Rear Walnut Avenue and Fern and Violet Path	$285 38		" " " April	1,192 00	
Between Cherry and Magnolia Avenues	283 96		" " " May	2,820 00	
Glen Avenue	36 75		" " " June	1,916 00	
	$606 09		" " " July	3,274 00	
One-fourth part of $606.09	$151 52		" " " August	564 20	
Balance due Mass. Horticultural Society,	3,307 90		" " " September	1,668 00	
			" " " October	2,280 50	
			" " " November	480 00	
			" " " December	20 00	
				$14,254 70	
			Net amount received from Receiving Tomb	1,043 00	
				$15,297 70	
			Less graves repurchased	60 00	
				$15,237 70	
			Deduct for Annual Expenses	1,400 00	
				$13,837 70	
		$3,459 42	One-fourth of $13,837.70 is		$3,459 42

E. & O. E.

JOHN L. DILL, *Treasurer.*

BOSTON, December 31st, 1902.

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same.

Rear Walnut Avenue and Fern and Violet Path.

24.5 days, man and horse	$ 91 88	
86 days, man	193 50	
		$285 38

Between Cherry and Magnolia Avenue.

41.1 days, man and horse	$154 13	
8.4 days, man and horse	31 50	
3 days, man and horse	15 75	
36.7 days, man	82 58	
		283 96

Glen Avenue.

9.8 days, man and horse	36 75
	$606 09
One-fourth of $606.09	$151 52

[Signed] JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 31, 1902.

I certify the foregoing to be a true copy of the improvements for the year 1902 rendered by the Superintendent.

[Signed] JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1903.

President.

O. B. HADWEN, of Worcester.

Vice-Presidents.

BENJAMIN P. WARE, of Clifton.

JOSEPH R. LEESON, of Newton Centre.

SAMUEL HOAR, of Concord.

OAKES AMES, of North Easton.

Treasurer and Superintendent of the Building.

CHARLES E. RICHARDSON, of Brookline.

Secretary and Librarian.

WILLIAM P. RICH, of Chelsea.*

Professor of Botany and Vegetable Physiology.

BENJAMIN M. WATSON, of Jamaica Plain.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Delegate to the State Board of Agriculture.

WILLIAM H. SPOONER, of Jamaica Plain.

* Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

STANDING COMMITTEES.

Executive.

THE PRESIDENT, O. B. HADWEN, CHAIRMAN.

THE CHAIRMAN OF THE FINANCE COMMITTEE, WALTER HUNNEWELL, *Ex officio.*

WILLIAM C. STRONG.
WILLIAM H. SPOONER.
NATHANIEL T. KIDDER.
FRANCIS H. APPLETON.
BENJAMIN C. CLARK.
CHARLES W. PARKER.
CHARLES F. CURTIS.

Finance.

WALTER HUNNEWELL, OF BOSTON, CHAIRMAN.

O. B. HADWEN.
ARTHUR F. ESTABROOK.

Lectures and Publication.

AARON LOW, OF HINGHAM, CHAIRMAN.

JAMES H. BOWDITCH.
E. W. WOOD

Library.

WALTER S. PARKER, OF READING, CHAIRMAN.

GEORGE E. DAVENPORT.
CHARLES W. SWAN.
CHARLES W. JENKS.
T. OTIS FULLER.

Plants.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS, CHAIRMAN.

JAMES WHEELER.
DAVID F. ROY.
ROBERT CAMERON.
ROBERT MELROSE GREY.

Flowers.

KENNETH FINLAYSON, OF BROOKLINE, CHAIRMAN.

MICHAEL H. NORTON.
WILLIAM NICHOLSON.
ELIJAH A. WOOD
JULIUS HEURLIN.

Fruits.

E. W. WOOD, OF WEST NEWTON, CHAIRMAN.

CHARLES F. CURTIS.
WARREN FENNO.
J. WILLARD HILL.
GEORGE F. PIERCE.
JOHN L. BIRD.
FREDERICK W. DAMON.

Vegetables.

WARREN H. HEUSTIS, OF BELMONT, CHAIRMAN.

VARNUM FROST.
WALTER RUSSELL.
AARON LOW.
GEORGE D. MOORE.
JOSHUA C. STONE
MICHAEL SULLIVAN.

Forestry and Roadside Improvement.

JAMES STURGIS PRAY, of Cambridge, Chairman.

NATHANIEL S. SHALER. HENRY S. HUNNEWELL.
JAMES H. BOWDITCH. HARLAN P. KELSEY.

Gardens.

PATRICK NORTON, of Dorchester, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND ARRANGEMENTS, *Ex officiis.*

HENRY W. WILSON. J. WOODWARD MANNING.

For Establishing Prizes.

WILLIAM H. ELLIOTT, of Brighton, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

JACKSON T. DAWSON.

Committee of Arrangements.

JOSEPH H. WOODFORD, of Boston, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

ROBERT FARQUHAR.

MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus †.

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Boston.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, Mrs. F. L., North Easton.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Washington D. C.
Ames, Miss Susan E., North Easton
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andrews, Frank W., Washington, D. C.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Appleton, William S., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Asmus, Ernst G., West Hoboken, N. J.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.

Bailey, Jason S., West Roxbury.
Bailey, Robert M., Dedham.
Baker, Clifton P., Dedham.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M.D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Boston.
† Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C , Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E. Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.
Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.

Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W., Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blanchard, John W., West Newton.
Blinn, Richard D., Chicago, Ill.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bolles, William P., M. D., Roxbury.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Brighton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Boston.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Wenham.
Burr, Matthew H., Hingham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.

Cabot, Dr. Arthur T., Boston.
Cabot, George E., Boston.
†Cadness, John, Flushing, N. Y.
Cains, William, South Boston.
Calder, Augustus P., Boston.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Boston.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Boston.
†Chase, Andrew J., Lynn.
Chase, Daniel E., Somerville.
Chase, William M., Dorchester.
Cheney, Mrs. Elizabeth S., Wellesley.
Childs, Nathaniel R., Boston.
Choate, Charles F., Southborough.
Christie, William, Everett.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., Dorchester.
Clapp, James H., Dorchester.
Clapp, William C., Dorchester.
Clark, Benjamin C., Boston.
Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Converse, Elisha S., Malden.

Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P , Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutting, Gen. Walter, Pittsfield.

†Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., Watertown.
Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, F. Gordon, Boston.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, West Roxbury.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York, N. Y.
Dunlap, James H., Nashua, N. H.
Durant, William, Boston.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverly.
Eldredge, H. Fisher, Boston.
†Eldridge, E. H., Roxbury.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Endicott, William E., Canton.
Estabrook, Arthur F , Boston.
Ewell, Warren, Dorchester.

Fabyan, George F., Brookline.
Fairchild, Charles, Boston.
Falconer, William, Pittsburgh, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslin dale.
Farquhar, John K. M. L , Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Wood's Holl.
Fay, Joseph S., Jr., Wood's Holl.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.

Flagg, Augustus, Boston.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Flint, David B., Boston.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
French, Miss Caroline L. W., Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
Frohock, Roscoe R., Malden.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Galloupe, Charles W., Swampscott.
Gardner, Mrs. Augustus P., Hamilton.
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M.D., Newport, R.I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
† Gould, Samuel, Boston.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.
Grey, Benjamin, Malden.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.
Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, Gardiner G , New London, Conn.
Hammond, George W., Boston.
† Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A.M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Mrs. C. S., North Cambridge.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Roxbury.
† Hazeltine, Hazen, Boston.
Hellier, Charles E., Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Hews, Albert H., North Cambridge.
Higginson, Francis L., Boston.
Higginson, Mrs. Henry L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N.H.
Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.

Hollis, George W., Grantville.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, Mrs. Robert C., Boston.
Hooper, William, Boston.
Horner, Mrs. Charlotte N.S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H , Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Boston.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant .
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johanssohn, Emil, Brookline.
Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Hingham.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
† Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M.D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
† Kimball, A. P., Boston.
Kimball, David P., Boston.
King, D. Webster. Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.

Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lothrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
Mackie, George, M. D., Attleboro.
† Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.
Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Mathison, Fred. R., Waltham.
Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
McCarty, Timothy, Providence, R. I.
McWilliam, George, Whitinsville.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Merrill, Hon. Moody, Roxbury.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Dorchester.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murphy, William Bowen, Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E , Boston.

Oakman, Hiram A., North Marshfield.
Olmsted, Frederick Law, Jr., Brookline.
Olmsted, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, O. H., Denver, Col.
Peck, William G., Arlington.
Peirce, Miss Marion W., Topsfield.
† Perry, George W., Malden.

Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Poor, John R., Boston.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Presson, Alfred, Gloucester.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George. Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M.D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, Edmund, Cambridgeport.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Rich, William P., Chelsea.
Richards, John J., Brookline.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robbins, I. Gilbert, Melrose Highlands.
Robinson, John, Salem.
Robinson Joseph B., Dorchester.
Roffe, Albert H., Newton Centre.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M.D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Hon. John E., Leicester.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Wellesley.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Boston.
Sawyer, Timothy T., Boston.
Scorgie, James C., Cambridge.
† Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.

Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Sherman, William H., Boston.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N.Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
Sleeper, Henry Davis, Boston.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, George O., East Lexington.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E , Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain Charles E., Roxbury.
Sweet, Everell F., Malden.

Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Manchester.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
†Turner, John M., Dorchester.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M.D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.

Walker, Miss Mary Sophia, Waltham.
Walley, Mrs. W. P., Boston.
Walsh, Michael H., Wood's Holl.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Hark.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverly.
Webber, Aaron D., Boston.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Jamaica Plain.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Weston, Seth, Chelsea.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Wood's Holl.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Willis, Joshua C., Roxbury.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Alles, William H., Chestnut Hill.
Anderson, George M., Milton.
Arnold, Miss Sarah L., Newton Centre.
Atkinson, Miss Caroline P., Brookline.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.
Brunton, Frank, Stockbridge.
Bullard, John C., Cambridge.
Butler, Edward, Wellesley.

Carpenter, Frank O., West Roxbury.
Carter, Mrs. Sarah D. J., Wilmington.
Cary, Miss Alice B., Lexington.
Chase, Joseph S., Malden.
Chase, Philip A., Lynn.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Comley, Norris F., Lexington.
Coolidge, Dr. Sumner, Watertown.
Cotter, Lawrence, Dorchester.
Cotting, Charles U., Boston.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., Cambridge.
Duffley, Daniel, Brookline.
Duncan, John W., West Roxbury.

Eastman, Edmund C., Brookline.
Eaton, Warren E., Reading.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fenno, Warren, Revere.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.

Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Foster, Lucius H , Dorchester.
Francis, George E , M. D., Worcester.
Fuller, T. Otis, Needham.

Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Gilman, Hon. Virgil C , Nashua, N. H.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, North Easton.
Grey, Thomas J., Chelsea.

Hall, Charles H., M. D., Corning, Cal.
Hall, Stacy, Boston.
Hallstram, Charles W., Boston.
Ham, Fernald E., Burlington.
Harris, Frederick L., Wellesley.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hersey, Edmund, Hingham.
Heustis, Warren, H., Belmont.
Hildreth, Miss Ella F., Lowell.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hobbs, George M., Boston.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracey, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Dorchester.
Jameson, G. W., East Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S , Brookline.
Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

Lancaster, Mrs. E. M , Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua. Brookline.
Lewis, E. L., Taunton.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.

Manda, W. A., South Orange, N J.
Manning, A. Chandler, Reading.
Manning, Richard C., Salem.
Martin William J., Milton.
Maynard, Charles, North Easton.
McLaren, Anthony, Westwood.
Meriam, Horatio C., D.M.D., Salem.
Metcalf. Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Lexington.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nixon, Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Patterson, William, Quincy.
Peirce, George H., Concord Junction.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Plimpton, Willard P., West Newton.
Pray, James Sturgis, Cambridge.
Pritchard, John, Newtonville.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robbins, Oliver R., Weston.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Shepard Harvey N., Boston.
Squire, Miss Esther A., North Cambridge.
Stevens, Mrs. Mary L., Cambridge.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M.D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
White, W. Henry, Lowell.
Whitney, Joseph, Cambridgeport.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wolcott, Mrs. H. L. T., Dedham.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXII.

Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments, and any Annual Member, having paid all dues, may become a Life Member by the payment of twenty dollars in addition thereto.

Annual Membership.

Every Annual Member, before he receives his diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIII.

Withdrawal or Discontinuance of Membership.

Any member may withdraw from the Society, on giving notice to the Treasurer and paying the amount due from him. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawals, or discontinuances to the Secretary, who shall erase such members' names from the list.

The attention of Annual Members is particularly called to Section XXIII.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; *and* Francis Summerest (or Summerer), 1833.

Édouard André, Editor-in-chief of the Revue Horticole, Paris, France.

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y.

Professor L. H. Bailey, Horticultural Department, Cornell University, Ithaca, N. Y.

John Gilbert Baker, F. R. S., F. L. S., Kew, England.

Charles Baltet, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

Peter Barr, London, England.

Archibald F. Barron, Turnham Green, London, W.

Napoleon Baumann, Bolwiller, Alsace.

D. W. Beadle, 303 Crawford St., Toronto, Ontario.

Professor William J. Beal, Agricultural College, Michigan.

Prosper J. Berckmans, Ex-President of the American Pomological Society, Upper Montclair, New Jersey.

Charles E. Bessey, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

Dr. Ch. Bolle, Berlin, Prussia.

Col. Gustavus B. Brackett, Pomologist to the United States Department of Agriculture, Washington, D. C.

Professor J. L. Budd, Ames, Iowa.

F. W. Burbidge, M.A., Trinity College Botanic Garden, Dublin, Ireland.

Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia

Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.

Sir W. T. Thiselton Dyer. K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

H. J. ELWES, F. R. S., Colesborne, Cheltenham, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultura-Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., LL.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agriculture, Copenhagen Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

SIR GEORGE KING, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Government Botanist, Cape Town Herbarium, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

F. W. MOORE, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

DR. DANIEL MORRIS, C.M.G., D.Sc., M.A., F.L.S , Imperial Department of Agriculture, Barbados.

George Nicholson, Kew, England.

Peter Nøvik, Secretary of the Norwegian Horticultural Society, Christiania.

William Paul, Waltham Cross, London, N.

Professor D. P. Penhallow, Director of the Botanic Garden, Montreal, Canada.

P. T. Quinn, Newark, N. J.

Cavalière Enrico Ragusa, Palermo, Sicily.

D. Redmond, St. Nicholas, Florida.

S. Reynolds, M.D., Schenectady, N. Y.

Benjamin Lincoln Robinson, Ph.D., Curator of the Gray Herbarium of Harvard University, Cambridge.

William Robinson, Editor of Gardening Illustrated, London.

William Salway, Superintendent of Spring Grove Cemetery, Cincinnati, O.

Edgar Sanders, Chicago, Ill.

William R. Smith, Superintendent of the Botanic Garden, Washington, D. C.

Robert W. Starr, Port William, N. S.

Dr. Joseph Stayman, Leavenworth, Kan.

Francis Summerest.

William Trelease, Director of the Missouri Botanic Garden, St. Louis.

Dr. Melchior Treub, Director of the Botanic Garden, Buitenzorg, Java.

H. J. Veitch, Chelsea, England.

William Watson, Curator of Royal Gardens, Kew, England.

Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletin 1. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

Montana.—Bulletins 27, 29 and 31.

New Jersey.— Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, 69, 2d ed., and 174. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (*68b*). Special Bulletins 1 (*77a*) and 4 (*82a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883 and 1884 [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report for 1898-99.

Washington. — Bulletins 28 and 29 6th, 7th and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th)